

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

SECURITIES AND EXCHANGE COMMISSION	§	
	§	
V.	§	Case No. 6:23-cv-00321
	§	
ROY W. HILL, et al.	§	

APPENDIX IN SUPPORT OF
RESPONSE TO MOTION FOR EVIDENTIARY HEARING ON
MOTION FOR INSTRUCTIONS CONCERNING
CETA LIQUIDATION AND INTERIM DISTRIBUTION

Receiver Albert C. Black III (“Receiver”) submits this appendix in support of his response to the motion seeking a hearing on the motion for instructions concerning the CETA liquidation and interim distribution.

Respectfully submitted,

/s/ Dennis Roossien
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COUNSEL FOR RECEIVER

CERTIFICATE OF SERVICE

I hereby certify that on the 25th day of July, 2024, this document will be served by the Clerk’s electronic procedures immediately upon its filing on all counsel of record.

/s/ Dennis Roossien

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SECURITIES AND EXCHANGE COMMISSION

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Case No. 6:23-cv-00321

DECLARATION OF BYRON W. VEECH

Pursuant to 28 U.S.C. § 1746, I, Byron W. Veech, declare under penalty of perjury that the following facts are within my personal knowledge and are true and correct:

1. My name is Byron W. Veech. I am over the age of 21 and have never pled guilty to or have been convicted of a felony or a crime of moral turpitude. I am of sound mind and am competent and capable of making this affidavit.

2. With the approval of this Court, I was retained by the Receiver to assist him in assessing the equipment accumulated and constructed by the Clean Energy Technology Association, Inc. ("CETA") under the direction of Roy Hill ("Hill") (Doc. 47, 48 and text order dated September 28, 2023).

3. A true and correct copy of my CV was attached to the motion seeking approval of my employment (Doc. 48 at 2-5).

4. A report of my findings is contained in the Receiver's Quarterly Report for the Fourth Quarter of 2023 (Doc. 66 at 2-8). If called to testify, I would affirm the statements in the Quarterly Report for the Fourth Quarter of 2023.

5. I have also reviewed the Receiver's Motion for Instructions (Doc. 75). In regard to the statement attributed to me, if called to testify, I would affirm the statements in the motion (Doc. 75 at 3-10).

6. I have also reviewed Hill's response (Doc. 80) and the declarations and

DECLARATION OF BYRON W. VEECH – Page 1

accompany documents from Mr. Bell and Mr. Matheney (Docs. 81-1 & Doc. 81-2), Hill's supplement and the exhibits and documents submitted therewith (Doc. 87 (including Ex. A & A-1 filed as a part of that document)), and Hill's motion for evidentiary hearing (Doc. 91 (including Exs. 1 & 2 filed as a part of that document)).


7. I have further reviewed a report prepared by the Department of Energy in 2017 following discussions with Hill, various CETA employees, Mr. Matheney, and others, as well as a site visit where a CETA prototype was demonstrated in operation.

8. I have further reviewed various emails providing the context for this site visit.

9. In my opinion, the Department of Energy Report generally parallels my own findings in this case.

10. I observed the CETA equipment six years after the report. The equipment I observed was still in a prototype stage, and there remained a lack of adequate operating and engineering data to support CETA's claims and a lack of a credible basis upon which to make a case for commercial viability.

Signed this 24th day of July, 2024.


BYRON W. VEECH

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

SECURITIES AND EXCHANGE COMMISSION

V.

ROY W. HILL, et al.

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Case No. 6:23-cv-00321

DECLARATION OF ALBERT C. BLACK, III

Pursuant to 28 U.S.C. § 1746, I, Albert C. Black, III, declare under penalty of perjury that the following facts are within my personal knowledge and are true and correct:

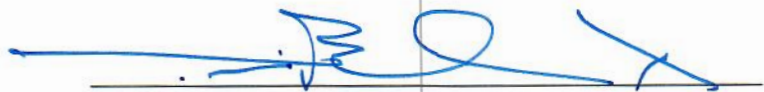
1. My name is Albert C. Black, III. I am over the age of 21 and have never pled guilty to or have been convicted of a felony or a crime of moral turpitude. I am of sound mind and am competent and capable of making this affidavit.

2. I am the Receiver appointed in this case. Among my duties is the recovery of receivership records.

3. Attach hereto are true and correct copies of receivership records I and my team recovered from Clean Energy Technology Association, Inc. ("CETA").

4. My duties also include the preparation of quarterly reports. The quarterly reports I have filed in this case were prepared in accordance with my official duties, and the facts stated therein are true and correct to the best of my knowledge based upon the investigation I have been tasked to perform.

Signed this 25th day of July, 2024.



ALBERT C. BLACK, III

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**PRELIMINARY REVIEW OF
CETA ENERGY'S
COAL DISTILLATION TECHNOLOGY**

October 30, 2017

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May be exempt from public release under the Freedom of Information Act (Exemption 4: Commercial/Proprietary). U.S. Department of Energy, Office of Fossil Energy review is required before public release: Dr. Daniel Matuszak, Office of Fossil Energy; October 30, 2017.

Guidance: This document contains Clean Energy Technology Association Inc. plant-specific information that was provided in confidence during a site visit. Areas of this report that appear highlighted contain business proprietary matter or otherwise sensitive information. When a figure caption is highlighted in its entirety, it should be understood that the figure itself is also business proprietary or otherwise sensitive.

CETA Energy's Coal Distillation Technology

EXECUTIVE SUMMARY

Clean Energy Technology Association Inc. (CETA) proposes to use coal distillation technology to produce marketable liquids, gases, and clean-burning char.

In response to an inquiry from the Secretary's office, the Office of Fossil Energy met with staff from CETA and subsequently conducted a site visit of CETA's facility in Fairfield, Texas. A summary of findings and initial, high level assessment of the technology are provided herein.

It was learned that CETA is maturing a technology that is at an early-to-mid Technology Readiness Level (TRL), and that CETA's ability to leverage DOE/NETL capabilities has the potential to accelerate its progress. It was determined and confirmed that improving the analysis capabilities within CETA's prototype system could accelerate CETA's experimental learning rate and give the technology a better chance of success. In the meantime, CETA and FE/NETL are exploring the use of federal lab capabilities.

As a maturing start-up company with a growing number of filed patent applications, CETA is naturally reluctant to disclose information that can result in its losing a sustainable competitive edge – at the time of writing this report, this reluctance precluded the ability of federal staff to conduct a techno-economic analysis using a market-relevant basis in order to understand the key performance factors leading to economic viability. With more DOE-CETA interactions, one hope is that CETA improves its ability to discuss market relevant information that impacts how technical progress is measured – a key hurdle (skill) for every startup company that aspires to raise capital or otherwise build partnerships.

BACKGROUND

Distillation of coal into liquids, gases, and coke or char has roots in the seventeenth century when attempts were made to supplant wood-derived charcoal for the process of reducing iron ore to elemental iron - the advent of the blast furnace in the mid-1700s accelerated this application of coal.¹ Coke is a strong reducing agent that is typically formed from low-sulfur bituminous coals through high temperature processes (900-1100°C) under oxygen deficient conditions. On the other hand, char is an enhanced solid fuel that is formed from many types of coals through lower temperature processes (450-750°C) under oxygen deficient conditions. Such processes can be referred to as carbonization, distillation, destructive distillation, devolatilization, depolymerization, and pyrolysis.

Low-temperature distillation of coal yields a greater amount of liquid product than high-temperature distillation, which yields greater amounts of gaseous products. Key liquid and gaseous products include ammonia, benzene, toluene, xylene, tar acids and bases, tar, and pitch. However, a vast array of basic chemicals and derivatives are possible as illustrated in the coal byproducts tree recently modified and made available by USGS.² The technology provider, CETA, cites the use of coal as a source of many useful consumer products, such as cosmetics, dyes, pharmaceuticals, transportation fuels, fire-fighting fluids, agriculture products, and road and cement materials.

It is known that the quality of the coal feedstock is critical to the final product. Many bituminous coals make a more satisfactory coke than lignite coal because they undergo a plastic transformation (caking) during the carbonization process. As such, bituminous coals are the primary source of metallurgical coal, which is of sufficient grade for use in steel production. However, methods have been developed

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for improving the caking properties of lignite and other non-caking coals, at least by thermal hydrogenation.^{3,4} Caking is not a concern for char production.

As a solid fuel, char has superior heating value, weight, and purity than the native coal. In the early 1900s, a cleaner burning char was developed and later branded as “Coalite” having a key marketable attribute of being a smokeless fuel at least for cookers, stoves, and boilers.^{5,6} For the same reasons, the Niger Coal Carbonization project by the World Bank aimed to promote the residential use of such clean coal and, being received well by housewives, it was successful for some time.⁷ It is noteworthy that while chemicals from coal significantly lost market share to petrochemicals after the 1940s,⁸ Coalite as a solid fuel continued to be sold into the 1980s and 1990s until natural gas became the dominant fuel for residential heating.⁶

The Department of Energy’s Clean Coal Technology (CCT) Demonstration Program included two relevant low-temperature coal conversion processes, ENCOAL Corporation and Western SynCoal, each of which removed liquids and caused chemical changes within the coal.⁹ ENCOAL’s technology¹⁰ is the most relevant to the application considered and will be referred to herein;

*“The ENCOAL project, which completed operational testing in July 1997, used mild gasification to convert low-Btu, low-sulfur subbituminous coal to a high-energy-density, low-sulfur solid product and a clean liquid fuel comparable to No. 6 fuel oil. Mild gasification is a pyrolysis process (heating in the absence of oxygen) performed at moderate temperatures and pressures. It produces condensable volatile hydrocarbons in addition to solids and gas. The condensable fraction is drawn off as a liquid product. Most of the gas is used to provide on-site energy requirements. The process solid is significantly beneficiated to produce an 11,000 Btu/lb low sulfur solid fuel. The demonstration plant processed 500 tons per day of subbituminous coal, and produced 250 tons per day of solid Process-Derived Fuel (PDF®) and 250 barrels per day of Coal-Derived Liquids (CDL®). Both the solid and liquid fuels have undergone test burns at utility and industrial sites. The project was successfully completed”.*¹⁰

Other relevant major processes for making coal liquids include Synthoil, HRI H-Coal, FMC-COED, PAMCO SRC, and Catalytic Inc.¹¹ More recent approaches include Evergreen Energy’s K-Fuel technology which was adopted in China.¹² Many coal to products approaches that proceed to liquids without a syngas intermediate (gasification) may include direct liquefaction by means of contact with a catalyst and an external source of hydrogen.¹³

While chemicals from coal distillation had a deteriorating business case in the U.S. after World War II, it should be noted that gasification was embraced at least in the U.S. after the oil shortages of the 1970s: Eastman’s Chemicals-from-Coal Complex began operation in Kingsport, Tennessee, in 1983 and continues operate a coal gasification process leading to a range of chemical, fibers, and plastics.¹⁴ In contrast to direct liquefaction, gasification is an indirect approach to converting coal to chemicals. It can be argued that gasification is more competitive than direct liquefaction (under current business as usual conditions) at least because it does not require an external source of hydrogen.¹⁵ Additionally it has the advantage of being easily amenable to carbon dioxide capture,¹⁶ which can further enhance the business case by means of utilization revenue or tax credits. Arguable, the “holy grail” of coal conversion is industrial gasification combined cycle with carbon capture utilization and storage (IGCC-CCUS).

The economic story for coal distillation is very different in China.¹⁷ At least in 2010, about 21% of total coal production in China was consumed to produce chemicals (673 million tons coal to chemicals); and the vast majority (~554 million tons coal feed) was converted by coal distillation mostly to coke (~513

million tons coal feed) and to char (~46 million tons coal feed). Gasification accounted for only 111 million tons coal conversion.

Coal Distillation – Select Known Technical Issues

Refinery integration. Coal derived liquids including tars are not suitable as feedstock for typical petroleum refineries due to high oxygen and nitrogen content as well as a high acid number. To overcome this path-to-market barrier, Warwick and Frederick teach a method for refining coal derived liquids by a series of distillations and extractions.¹⁸

Fouling. The plasticization of many coals during distillation leads to the clinging of a residue layer on conveyors and screw mechanisms within continuous pyrolyzers, impairing the conveyance and distribution of heat through the materials. For coking ovens, the limited heat transfer impairs the conversion of char to metallurgical coke. Wolfe et al. discloses an apparatus and method for converting coal into motor fuels and metallurgical coke in a self-cleaning coal pyrolyzer wherein coal is converted to char, which is subsequently treated with binders and calcined to coke with suitable coke reactivity index and coke strength after reaction.¹⁹

Thermal efficiency. Heating elements positioned within the furnace housing of prior disclosed pyrolyzers have led to hot spots and other uneven heating of coal, and have caused fatigue in and the shortened lifespan of furnace components. This concern applied to electric heaters as well as burners, having a direct impact on thermal efficiency. Wolfe discloses a pyrolyzer and method comprising a twin screw extruder with a hollow drive shaft to provide heating; further, the method minimizes the amount of external energy required, with the aim of sustaining the pyrolysis by burning only the volatile materials generated in producing char.²⁰

Stability concerns. It is known that the solid fuel products derived by pyrolysis processes can exhibit self-heating and self-ignition due to oxidation. This concern was mitigated under the CCT program's ENCOAL project by including a deactivation approach that includes a controlled exposure to air.²¹

Coal Derived Crude – Potential Opportunities

Value of phenolic intermediates. Crude derived from pyrolysis processes may be refined to isolate marketable commodity chemicals such as phenols and polyphenolic compounds. During the ENCOAL project, it was considered attractive to separate the crude into four high-value products: crude cresylic acid, pitch, refinery feedstock, and oxygenated middle distillate.²¹ A chemical separation operation would need to be part of the process.

Learning more about corrosion and refinery integration. The Total Acid Number (TAN) of crudes is one key measurement that allows or prohibits conventional refinery integration; it is a measure of acidity for a non-aqueous solution where at TAN of 1 or greater indicates a High Acid Crude (HAC).²² However, one cannot determine how corrosive a crude will be or which parts of a refinery it will affect by judging the TAN itself; further, it is believed that naphthenic acids cause the most severe corrosion and that some naphthenic acids are relatively inert; therefore, HACs are viewed as an opportunity and are being processed by some refiners especially as low-cost solutions become available to mitigate HAC challenges

and as the global supply of HACs increases.²³ In other words, two oils with identical TAN can exhibit significantly different degrees of corrosion.

As the petroleum industry continues to extend its understanding of conventional HACs and evolves its ability and willingness to work with such HACs, the aspiring coal carbonization community would be prudent to characterize the acids within their high TAN crudes so that broader refinery integration potential could be increased.

Poly-source refinery paradigm shift. Considering the difficulty in blending coal derived liquids into a petrochemical operation, aspiring coal conversion technologies may consider over-sizing their downstream chemical separations to accommodate petroleum crudes and thus attain better economies of scale at least for the refinery.

Energy Storage. With an abundance of electric capacity, intermittent energy, and generator such as nuclear plants at risk of closure; coal distillation can be viewed as storage of excess energy (e.g. in the form of combustible liquids).

CETA APPROACH

Clean Energy Technology Association Inc. (CETA) is marketing a coal distillation plant that produces four products: char ("COAL/ite"), crude oil, aqueous solvent ("CETASolve"), and syngas. According to information presented by CETA staff and brochures, the CETA coal distillation can be characterized as a classical low-temperature carbonization. Figure 1 shows an overall block diagram for CETA's distillation concept process including a liquid separation operation that leads to aqueous and oil phase products. CETA has developed a continuous prototype system to validate the overall process in Figure 1. Figure 2 is a process flow diagram that illustrates the arrangement of key sub-systems in CETA's continuous prototype system. Figure 3 shows how one or more CETA prototype systems may be integrated into a concept plant having approximately 500 kTonnes coal feed per year. For comparison, Figure 4 shows key sub-systems in an analogous process by ENCOAL Corporation.²¹

Observations made during site visit of CETA's R&D facility on August 10, 2017

CETA's facility is located circa 1270 S Bateman Rd, Fairfield, TX.²⁴

The scale of CETA's system can be appreciated in Figure 6. The maximum furnace temperature is ~600°C (~1100°F).²⁵ The furnace operates under nitrogen at pressures just marginally above ambient. The unit operates continuously until all the coal in the hopper is depleted. The residence time of coal in the furnace is approximately 5-6 hours. The system's capacity is on the order of 1 tonne of coal feed per day.

CETA retains a small inventory of various coal types including Ohio, WVa, PRB, and lignitic coals. Coal is transported by a small truck into a loading bay that is equipped with a grinder, and where two or more types of materials can be blended. CETA's brochure suggests that some coals or coal blends are soaked for 3-5 hours prior to the pyrolysis operation, but a soaking operation was not viewed or disclosed. An optional drying system is adjacent to the loading bay but it is not being used. Prepared coal is conveyed into the hopper (Figure 15) at the top of the pyrolysis furnace (Figure 8 - Figure 11).

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The prototype system was warm to the touch. The gas flare was on but there was no visible plume. The coal feed device and conveyance system were rotating. A bag of char product appeared full. The control room computer indicated that the hopper was empty and that the system temperature was well below 1100°F.

A glycol cooling system is used to operate the gas condenser as well as to provide indirect cooling for the quenching of char that exits the furnace. Condensed humidity was present on the surfaces.

Volumes of coal are measured prior/during loading to the hopper. Volumes or masses of liquid are measured after collection of each liquid phase. Collected char volume or mass are measured. Syngas volumes and composition are understood indirectly by analyzing all the solid and liquid products. The effluent gases are sent to a flare and are not measured.

Collecting liquids. A single port at the side of the furnace and below the condenser is used to gather a multiphase liquid. The collected liquid was black and opaque, suggesting the presence of solids in addition to the emulsion. The liquid was drained into buckets and physically separated to produce oil and water phases, which were collected and then stored separately. CETA staff stated that the aqueous phase consists of 90-95wt% water.

Collecting solids. The char is conveyed to a storage bin that is connected to the cooling operation illustrated in Figure 12 to Figure 14 and kept under nitrogen. The char emerges warm to the touch after the cooling stage. A sample was retrieved. Cyclones or electrostatic precipitators were absent.

Collecting gases. Gases are flared. The gas flare was on but there was no visible plume as noted. The system does not take any measurements of the effluent gas.

A batch R&D furnace complements the continuous system shown in Figure 6.

Staff stated that the system has been operational on the order of years and never had to be cleaned out. Fouling of the electric heaters was not a concern. A visual inspection of the furnace's interior was not performed.

Electricity is the primary energy input into the prototype furnace.

CETA's process flow diagram for a larger scale operation was centered on using a lignitic coal feed.

Process Aspects, Mass and Elemental Balances, Energy Balances

The key objective of the August 10 site visit was to make sure that the system works. Towards that end, an understanding of the chemistry and process (in particular the mass, elemental, and energy balances) is essential.

Mass and Elemental Balances

Figure 1 presents a simplified block diagram of CETA's concept distillation plant. A detailed process flow diagram was made available by the CETA staff, in confidence, and is shown in Figure 3. This process data was used in conjunction with the product composition data provided by CETA staff and in the CETA brochures given to DOE so that a mass balance could be conducted on the process.

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239 The mass and elemental balances conducted during the site visit on August 10 is presented in Table 1 in
240 association with Figure 1. It became evident that initial mass and elemental balances did not attain
241 closure. A discussion with the technical team revealed that the product compositions in the CETA
242 brochures were outdated or incomplete. The laboratory director stated that the analysis company used
243 to gather the data in the brochures was replaced with another analysis company that has better
244 capability (including ICP-MS). Further, CETA is building an enhanced analysis capability at its R&D site.

245 Subsequent to the site visit, the CETA technical team provided supplementary information.²⁶ CETA
246 acknowledges that it has not conducted extensive testing at one time in a manner to attain closure on
247 mass and elemental balances, in particular due to great differences in times scales for obtaining test
248 results; that it uses an average of test runs in order to serve as a design basis for their concept
249 distillation plant; and that it did not conduct gas testing beyond what was required to attain an air
250 permit. CETA provides a “working mass balance” as shown in

Table 2 and discusses of the potential sources of error along with the supplementary information. CETA states that it is willing to work with DOE to further enhance closure on its mass and elemental balances.

PERSPECTIVE: CETA has made great progress in developing its current system and operation. Yet, CETA does not yet have sufficient analysis capabilities to attain mass and elemental balance closure, at least in real time - it is not necessary to attain such closure in order to explore a business model. This should not be viewed as a defect but as an indication of where CETA is in the process development lifecycle.

Energy Balances

It is critical to attain closure in conducting mass and elemental balances in order to have a complete understanding of the energy requirements for a chemical process. Notwithstanding the uncertainties of CETA's mass and elemental balances, the following information is understood about CETA's operation.

The CETA team stated that the entire process consumes 695 kWh of electricity per ton coal feed. This includes a 7.5% contingency and encompasses the furnace heating and auxiliary equipment loads. Given the mass flow rate of coal feed shown in Table 1, this amount of electricity required is 39.1 MW. The energy required to separate all phases and to distill products into constituents is not considered by CETA, and would become the responsibility of a downstream refinery operation.

Given the CETASolve composition shown in Figure 5 and considering that this solution is 90% water by mass, the minimum work that would be required to separate each constituent into separate streams can be determined to have a floor value on the order of 125 MJ per short ton of CETASolve solution.²⁷ Assuming that the CETA plant generates 157,894 ton CETASolve per year as described in Table 1, the absolute minimum rate of work would be on the order of 0.6 MW.

The amount of energy required to raise the temperature of only the fixed carbon in the original coal to a final temperature of 1100°F, assuming an average heat capacity of 1 kJ per kg per K, would at a minimum be *ca.* 520 MJ per short ton of fixed carbon. Using the rate of fixed carbon showing in Table 1, stream 1, the absolute minimum load for heating the fixed carbon only in the concept plant would be on the order of 2.2 MW.

Similar bounding calculations can be performed on all the other constituents, so long as accurate heat capacity and phase change information is established within a frame of reasonably established assumptions.

Physical Properties

CETA's solid products 'Lignite COALite' and 'PRB COALite' have energy densities of 9,660 BTU/lb and 12,132 BTU/lb, respectively.²⁸ Total sulfur densities are 1.08wt% and 0.42wt%, respectively. For comparison, "ENCOAL's solid fuel product has an energy density of about 11,000 Btu per pound, and the sulfur content averages 0.36 percent".⁹

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CETA states that “1 gallon of our liquid stream= 8.34 lbs” at least for the batches analyzed in association with Table 2.²⁶ The “liquid stream” is interpreted to mean stream “34” in Figure 2 and Figure 3. This suggests that a significant fraction of CETA’s liquid stream is water. For comparison,

1 gallon of Fuel Oil No. 6 at 25°C (density 0.9650 g/mL, 10wt% water)²⁹ would weigh 8.053 lbs

1 gallon of water at room temperature (density 1.000 kg/L) would weigh 8.345 lbs

1 gallon of phenol at 25°C (density 1.072 kg/L) would weigh 8.946 lbs

The acid number TAN of the oil phase was approximately 1.6 mg KOH/gOil for one of the batches, despite having an alkaline pH. On a subsequent call, CETA staff stated that the TAN was 1.36 mg KOH/gOil. This indicate that the oil is a high acid crude (HAC). However, as discussed earlier, the TAN does not decisively conclude that the oil will lead to severe corrosion in a refinery. For example, naphthenic acids in petroleum crudes are thought to cause the most severe corrosion – these contain carboxylic functional groups that can polymerize through a dehydration mechanism, and affect the shelf life of the crude. However, according to CETA’s technical team, CETA’s crude is very stable and has a shelf life on the order of years, suggesting that it does not have a great amount of naphthenic or other carboxylic acids.

RECOMMENDATION: In general, it would be a contribution to the field to build a knowledge base for and appreciation of high acid crudes derived from coal (and oil). DOE/NETL should consider this as a potential subject of exploration, e.g. in the scope of a National Coal Council / National Petroleum Council collaboration or separately.

RECOMMENDATION: DOE/NETL should consider conducting a comparison of other pyrolysis systems would build an appreciation of the thermal efficiency of CETA’s system and others. For example, a pyrolysis furnace with potentially high thermal efficiency and coal feed flexibility is taught by RA Wolfe and assigned to Nucor Corporation.²⁰ Another example is a device recently disclosed by Mitsubishi Heavy Industries.³⁰

Value Propositions

CETA’s COAL_{lite} product is similar to the clean burning char “Coalite” that was described earlier herein, in that it burns more effectively and efficiently with lower emissions than the native coal. Additionally, CETA aims to develop and produce metallurgical grade coke. For comparison, during the ENCOAL project it was believed that 80% of the process capacity could be sold into the utility market, and 20% of the capacity may be sellable to metallurgical markets.

CETA presents a vision to service the Colstrip Power Plant, which has suffered significant deterioration of revenues at least due to loss of competitiveness in the adjacent organized power markets. In theory, a more efficient fuel if priced well would improve the dispatch-ability of the Colstrip plant in the organized power markets.

CETA states that it is working with some refiners to integrate their crude oil into existing refinery operations. It was acknowledged that not all refiners are willing to take such oil, but some refiners are.³¹ For comparison,

*“ENCOAL’s liquid fuel product can substitute for No. 6 fuel oil or serve as a chemical feedstock. During the demonstration, over 83,500 tons of solid fuel was shipped to seven customers in six states, as well as 203 tank cars of liquid product to eight customers in seven states”.*⁹

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CETA states that it is attempting to secure contracts to use its aqueous solvent (“CETASolve”) for EOR application.³² Another option for CETASolve was proposed to be CO2 capture, due to its alkalinity.³³

Markets for cresols, xylenols, and cresylic acid mostly produce polymers as an end application, and the largest producer of creyslics was Sasol Phenolics at least circa Y2015,³⁴

*“Sasol Cresylic Acid Blends are versatile mixtures of phenol, cresols, xylenols, and other alkylated phenols processed and purified through pure isomer and fraction separation to create chemistries free of impurities. They can be used in many applications, including high-performance plastic and sensitive electronic and photographic applications. Other common uses include wire enamel, resins, antioxidants, flavor and fragrance chemicals, herbicides, surfactants, oilfield chemicals, and disinfectants”.*³⁵

CETA’s syngas may be useful for chemical synthesis or for burning to provide process heat or power.

Economics

CETA reports a capital expenditure of \$194.2 million for its envisioned 500,000 TPY coal distillation plant. For comparison, a first order estimate suggests a capital expenditure on the order of \$140 million for a 500,000 TPY ENCOAL mild gasification plant.³⁶

CETA’s example lignite distillation plant (500,000 TPY) pro-forma model³⁷ accounts the following revenue streams in Year 1:

Sale of Liquid Products	\$105.5 million
Sale of other Gas Products	\$23.3 million
Sale of COAL/ite	\$6.4 million

The logic of liquid sales was not under examination during the August 10 site visit. However, it is evident that the viability of the conceptualized operation hinges on liquid sales, with COAL/ite serving as a byproduct.

Oil recovery. Given the combined mass flow rate of CETA’s liquid streams (Streams 3 and 4 in Table 1) and assuming a specific gravity of 0.95, CETA’s 500 TPY concept plant would generate about 1.2 million barrels of liquid product per year. Assuming that each so-generated barrel of CETA liquid product was used to produce one barrel of petroleum oil by means of secondary or tertiary recovery, the resultant revenue of the petroleum oil would only be \$59.3 million when the sales price of \$50/bbl. In the two months spanning this inquiry into the CETA process, the price of WTI crude was in the range of \$47 to slightly above \$52 per bbl. Therefore, it is reasonable to conclude that oil recovery likely is not the principle application of CETA’s liquids at least at current market prices for oil.

Phenolic compounds. Assuming that 10% of CETA liquids are phenolic compounds that can be separated and sold at \$1,100 per metric ton, the resultant phenolic revenue would be \$19.7 million per year for the 500 TPY concept plant. Similarly, if 30% of CETA liquids are saleable phenolic compounds, then the resultant annual revenue would be \$59.1 million. Therefore, it is reasonable to conclude that phenolic revenue is likely not the principle application of CETA’s liquids. A combination of models would be required to attain the above-shown year-1 liquid product revenue.

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Rare Earth Elements. The sale of rare earth elements could be a major contributor to CETA's revenue model. Discussions with CETA's chief chemist suggested that rare earth elements may be significant in the oil phase. This is an area suitable for CETA-NETL collaboration.

Carbon Capture Solvents. It is known that BASF has been increasing the prices of ethanolamine compounds by as much as \$180 per metric ton, or \$28.62/bbl recently after an earlier increase of \$10.49/bbl. Since the supply function for carbon capture solvents such as ethanolamine is proprietary information, it is difficult to conclude whether a CETASolve product would generate sufficient revenue to support the pro-forma sales information above. Given the prices of ethanolamine compounds, carbon capture solvents may likely be a better application of the CETASolve product than EOR, but more technical diligence is required to confirm whether CETA's product can be a substitute of existing marketable products.

RECOMMENDATION: Considering that CETA is highly reluctant to describe its business model, targeted customer segments, and value propositions for liquid product sales; a trustful channel should be identified and used for further validation of this approach.

Competing Approaches

It is reasonable that CETA's technology will face the same competition as ENCOAL's technology as well as competition from petrochemical operations.

"The competition for the ENCOAL™ application of the LFC™ process is embodied in any process that improves low-grade, low-sulfur, mostly western coals by driving off the moisture and other undesirable constituents, leaving a solid fuel that delivers materially more Btus per unit weight and thereby can be economically shipped over long distances for use as a compliance fuel or as a source of heat and carbon to processes such as blast furnaces and DRI processes. Some of the current, or recent, technologies that have similarities to LFC™, or generate product with similar qualities are: a hot-water drying process developed at the University of North Dakota, the WECO advanced coal cleaning process; DOE's Lignipel process, the Anaconda, or ARCO process, and the Rosebud Syncoal CCT Project. A steam-drying/mild pyrolysis process that now is in operation at commercial scale—also near Gillette, Wyoming—is the Koppelman, or K-fuel process, which drives off moisture under high temperature and pressure, then reabsorbs the non-water liquids into the dry solids, thus eliminating dusting and pyrophoricity problems. The K-fuel process, requiring high temperatures and pressures, is more capital intensive than LFC™".¹⁰

As a reminder of the importance of considering the end recipient of the product and the competition that can displace a coal-to-chemicals offering, consider the following quote from an excellent account of chemicals from coal by HR Batcheler: *"In many cases the production of chemicals from petroleum is very flexible, with freedom to enter or withdraw from markets as prices fluctuate. The coal plant, presumably, will not have this freedom, and the projected income from chemicals must not be calculated on the basis of a price higher than that which will induce the first petroleum competition into the market".⁸*

RECOMMENDATION: to enable a techno-economic analysis (TEA) of the CETA approach, the revenue model for each product stream should be validated so that an appropriate maximum sales price is used in subsequent TEA. Such a TEA would enable determination of the maximum allowable capital and operating costs for CETA's concept plant. There is no other way to determine the maximum allowable capital costs without considering the market wherein the technology competes.

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RECOMMENDATIONS

1. CETA has made great progress in developing its current system and operation. Yet, CETA does not yet have sufficient analysis capabilities to attain mass and elemental balance closure, at least in real time - it is not necessary to attain such closure in order to explore a business model. This should not be viewed as a defect but as an indication of where CETA is in the process development lifecycle. DOE/NETL should continue working with CETA and explore the possibility of a CREDA relationship to accelerate progress of this technology and an accurate appreciation of its economic potential.
2. In general, it would be a contribution to the field to build a knowledge base for and appreciation of high acid crudes derived from coal (and oil). DOE/NETL should consider this as a potential subject of exploration, e.g. in the scope of a National Coal Council / National Petroleum Council collaboration or separately.
3. DOE/NETL should consider conducting a comparison of other pyrolysis systems would build an appreciation of the thermal efficiency of CETA's system and others.
4. Considering that CETA is highly reluctant to describe its business model, targeted customer segments, and value propositions for liquid product sales; a trustful channel should be identified and used for further validation of this approach.
5. To enable a techno-economic analysis (TEA) of the CETA approach, the revenue model for each product stream should be validated so that an appropriate maximum sales price is used in subsequent TEA. Such a TEA would enable determination of the maximum allowable capital and operating costs for CETA's concept plant. There is no other way to determine the maximum allowable capital costs without considering the market wherein the technology competes.

The use of alternate coal beneficiation processes which improve the characteristics of lower rank coal and produce byproduct streams that can be used as feedstock to other industries is important to the coal mining industry.

A completed pilot plant with sufficient instrumentation and test ports for real time testing is recommended prior to scale-up. A completed and validated mass and energy balance of the process is needed in order to proceed with further development of the technology.

A more rigorous, completed economic evaluation of the process including capital costs, completed valuation of product streams, market analysis, and operating costs at a commercial, full scale application is recommended prior to scale-up.

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447 **INTERACTIONS WITH CETA LEADING TO THE PRESENT REPORT**

448 *ca.* July, 2017 – CETA visits NETL and gives a presentation to Angelos Kokkinos, John Wimer, and Chris
449 Matranga.

450 August 10 – Site visit at CETA Energy by D Matuszak. D Matuszak suggests a presentation to a
451 community of peers and recommends that CETA considers interaction with the National Coal Council,
452 offering introductions.

453 *ca.* mid-August – NETL provides its legal form for sample analysis to CETA, offering NETL analytical
454 capabilities in order to learn more about at least the content of rare earth elements in each CETA
455 stream.

456 August 25 – CETA submits updated mass balance information and follows up with D Matuszak by
457 conference call.

458 September 27 – Roy Hill of CETA presents at the National Coal Council’s Annual Fall Meeting in
459 Birmingham. D Matuszak collects feedback on this content from National Coal Council members.

460 October 12 – CETA reaches out to NETL to connect staff with CETA’s chief chemist.

461 October 23 – Conference call with CETA regarding analysis of samples. Discussion of disclosure terms in
462 NETL’s materials testing agreement. Agreement that CETA would send to NETL the discussed samples
463 from Freestone County.

464 October 26 – NETL acknowledges CETA’s Materials Safety Data Sheet (MSDS), which is required to
465 receive samples at NETL and thus commence testing of solid samples.

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468

469 Respectfully Submitted,

470 HQ POC: Dr. Daniel Matuszak (Daniel.Matuszak@hq.doe.gov)

471 Acknowledgements: Tom Tarka (Thomas.Tarka@hq.doe.gov), Tom Sarkus (NETL), Evan
472 Granite (NETL), David Muraskin (CONTR)

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ACRONYMS

CCT	Clean Coal Technology
CETA	Clean Energy Technology Association Inc.
gOil	Grams of Oil
HAC	High Acid Crude
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IGCC-CCUS	Industrial Gasification Combined Cycle with Carbon Capture Utilization and Storage
KOH	Potassium Hydroxide
Mg	Milligrams
MSDS	Material Safety Data Sheet
TAN	Total Acid Number
TEA	Techno-Economic Analysis

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FIGURES

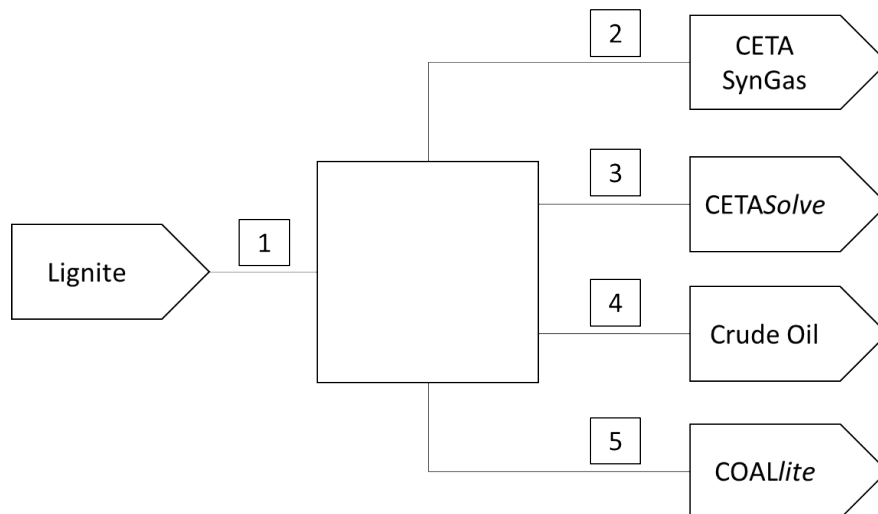


Figure 1. High-level diagram for CETA's conceptualized distillation plant. CETA's chief chemist stated that the solvent phase mass flow rate (Stream 3) is 32% of the Stream 1 mass flow rate and comprises 90-90% water; and thus the oil phase (Stream 4) is produced at 8% of the Stream 1 mass flow rate.

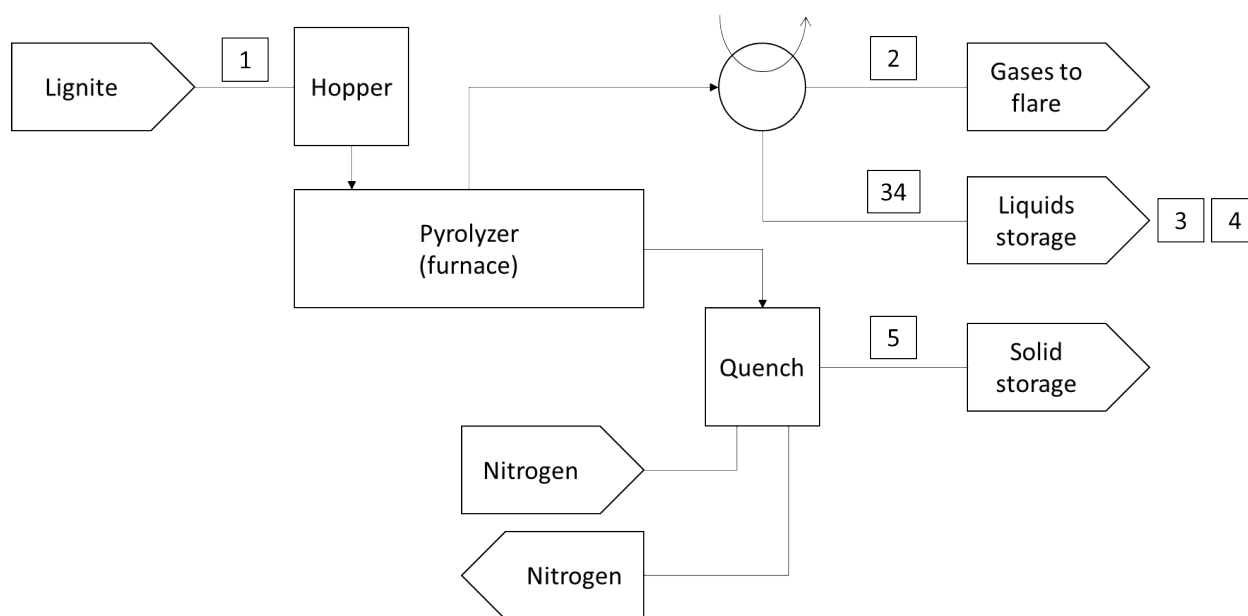


Figure 2. Block flow diagram for CETA's pyrolysis operation, illustrating the arrangement of systems observed during the site visit on August 10, 2017. This operation resides within the "CETA" block of Figure 3.

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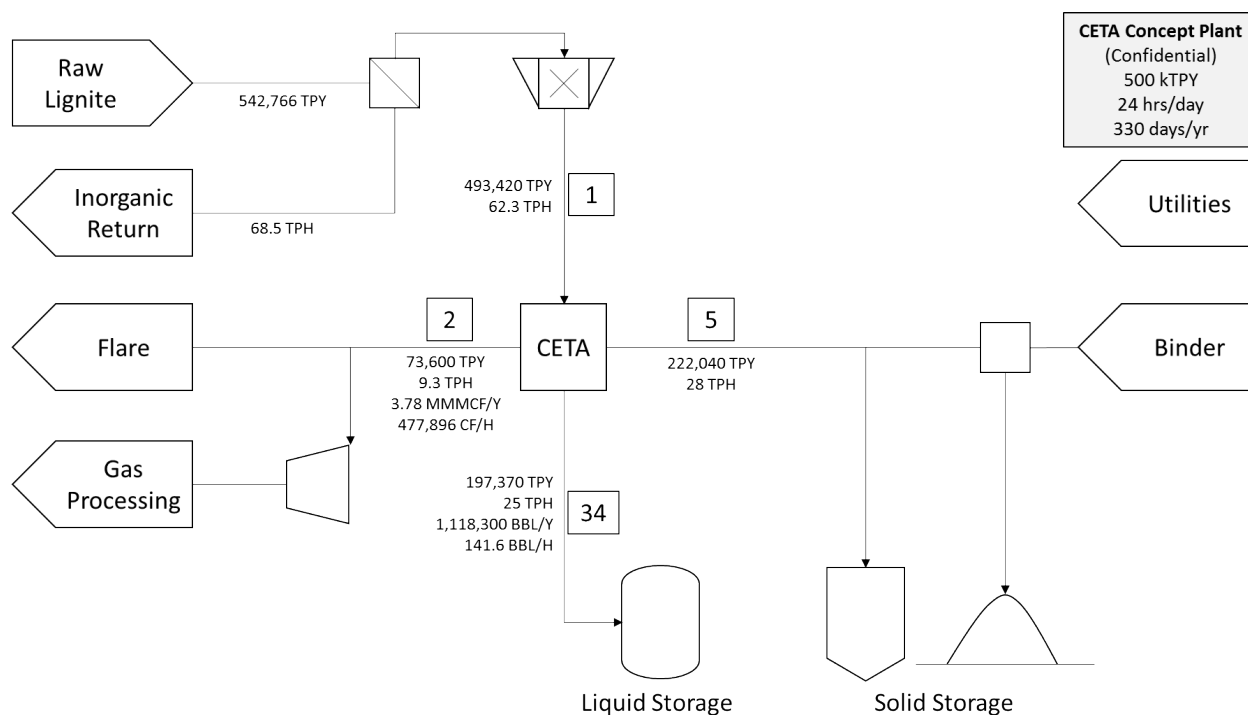


Figure 3. CETA Energy's concept plant having 500 kTPY capacity. Refer to Figure 2 for content of the central "CETA" block. A small error in the mass balance surrounding the "CETA" block is noted in this diagram and is likely attributable to Stream 2, which was revised in Table 2 to attain overall mass closure. CETA's chief chemist stated that the solvent phase mass flow rate (Stream 3) is 32% of the Stream 1 mass flow rate and comprises 90-90% water; and thus the oil phase (Stream 4) is produced at 8% of the Stream 1 mass flow rate. CETA explains that errors arise in their flow diagram and brochure due to how the data were averaged.³⁸ [INFORMATION SHARED BY CETA IN CONFIDENCE]

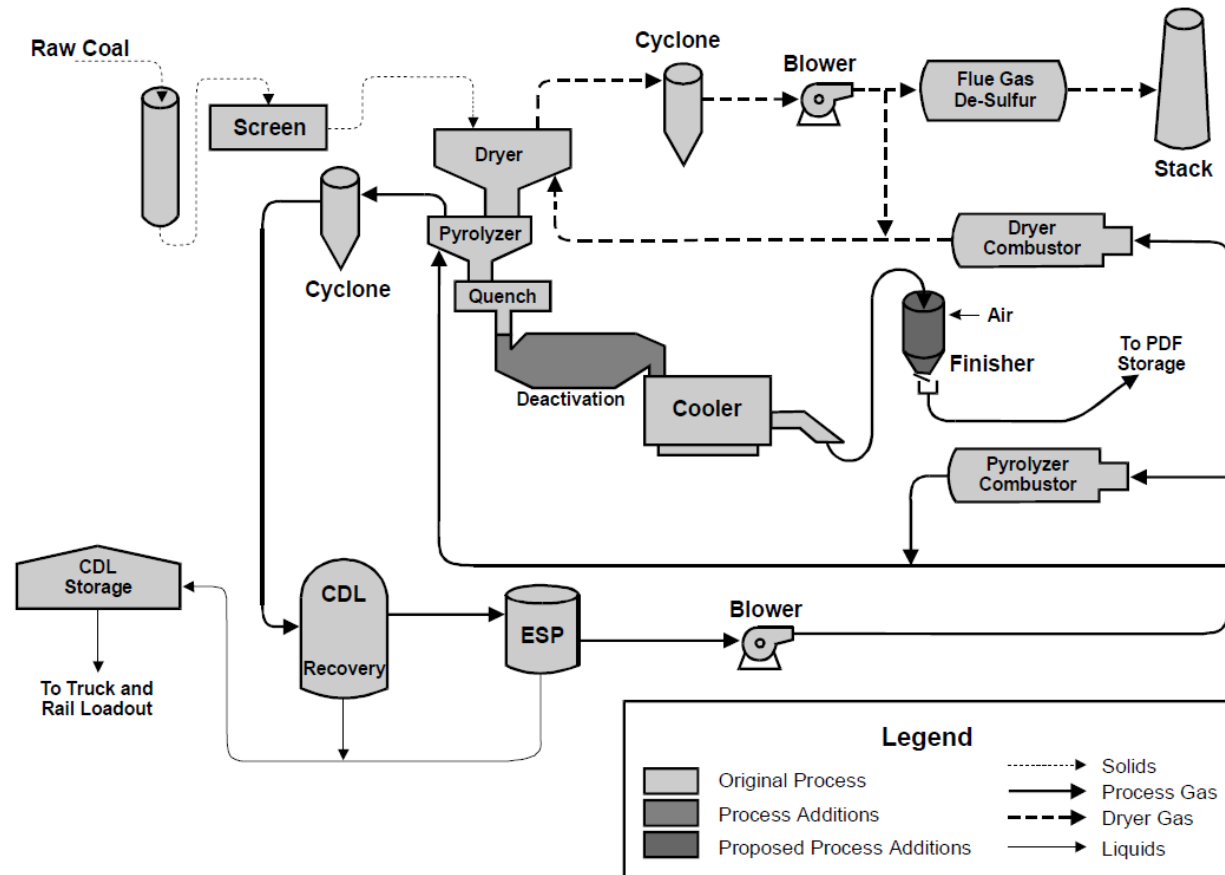
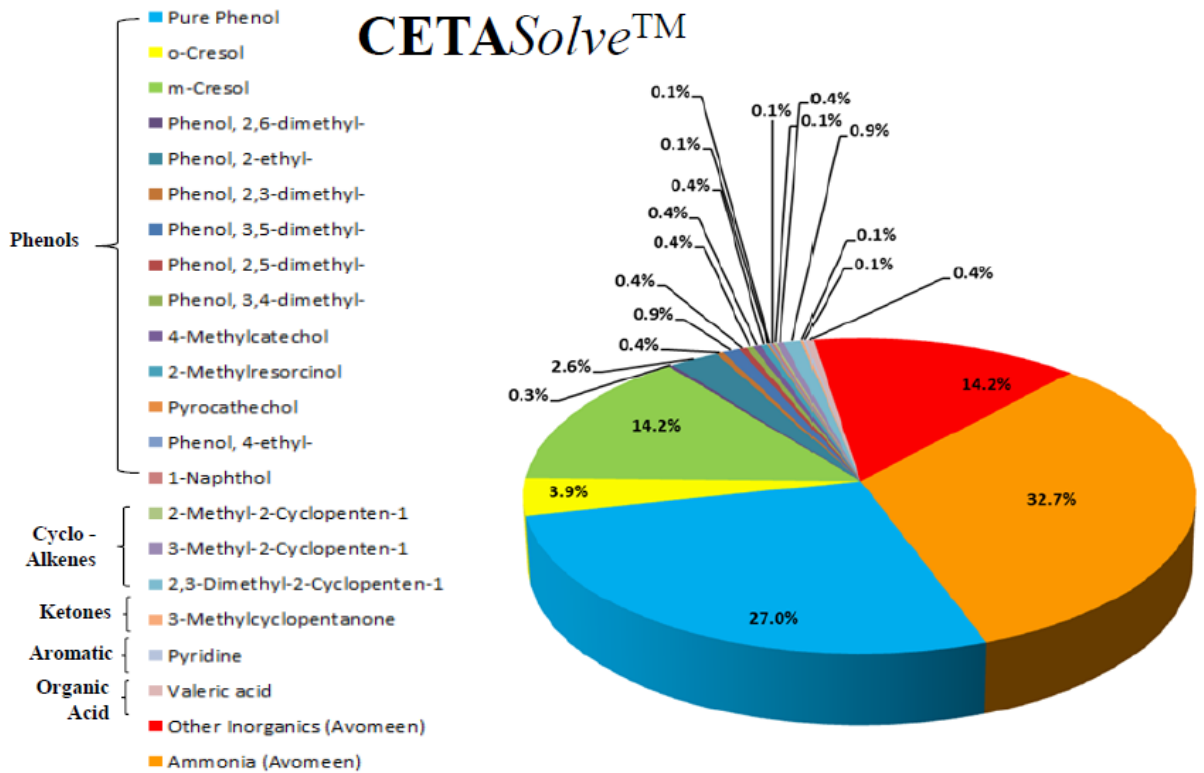


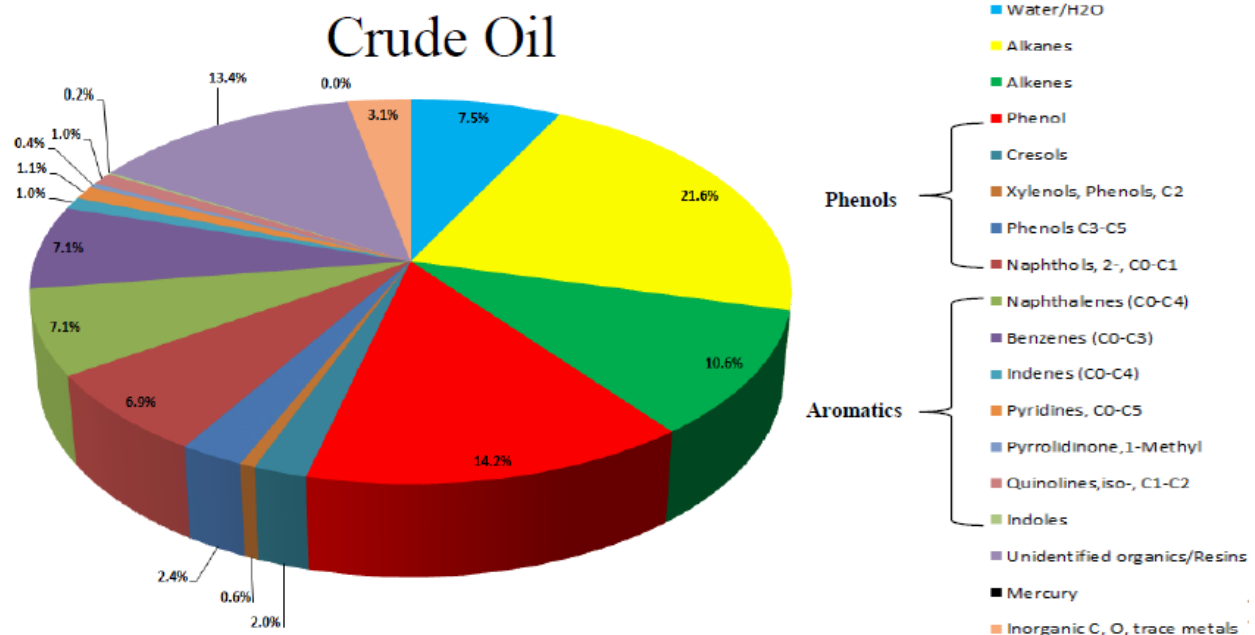
Figure 4. ENCOAL mild gasification system illustration showing key unit operations.²¹ "Coal is fed into a rotary grate dryer where it is heated to reduce moisture. The temperature is controlled so that no significant amounts of methane, CO₂, or CO are released. The solids are then fed to the pyrolyzer where the temperature is about 1,000 °F, and all remaining water is removed. A chemical reaction releases the volatile gaseous material. Solids exiting the pyrolyzer are quenched to stop the pyrolysis reactions".⁹ Acronyms: Coal Derived Liquid (CDL), Electrostatic Precipitation (ESP).

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518 *Figure 5. Compositions of CETA's aqueous and oil phases. SOURCE: CETA brochure.²⁸*

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Figure 6. CETA and DOE staff standing at the front/right section of CETA's continuous coal distillation prototype system. Gray insulation covers the four stage pyrolyzer/furnace (illustrated in Figure 8 to Figure 11). A blue motor runs a chain mechanism that conveys coal using an array of plows within the furnace. Silver insulated pipes collect gases from the headspace of the furnace and direct them to a condenser (not shown, left, see Figure 7). A partial view of the two-stage hopper (illustrated in Figure 15) appears above the silver insulated pipes at the top left of the image. Char is collected and stored after a cooling operation (not shown but illustrated in Figure 12 to Figure 14) to the right of the image. Staff from left to right: Tracy Thompson, Dr. Ghazaleh Ghadlmkhani, Dr. Daniel Matuszak, Scooter Long.



Figure 7. Image of rear/right section of CETA's continuous coal distillation prototype system. A yellow condenser appears at the right, and is connected to silver insulated pipes that collect gases from the headspace of the furnace. SOURCE: CETA brochure.

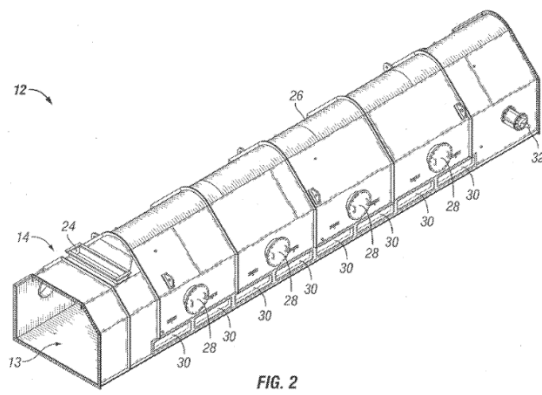


Figure 8. Furnace housing

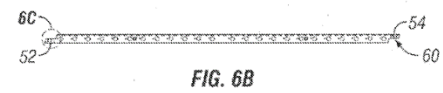
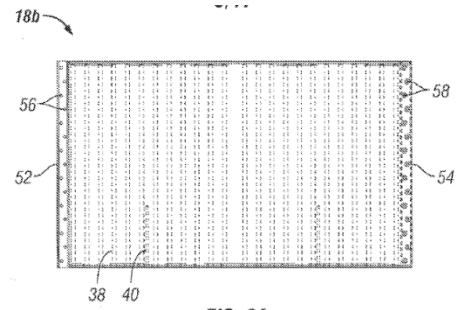


Figure 10. Heating plate on which material is relayed.

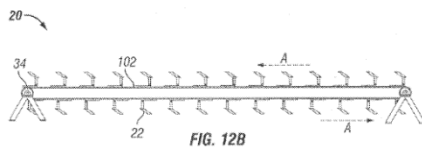
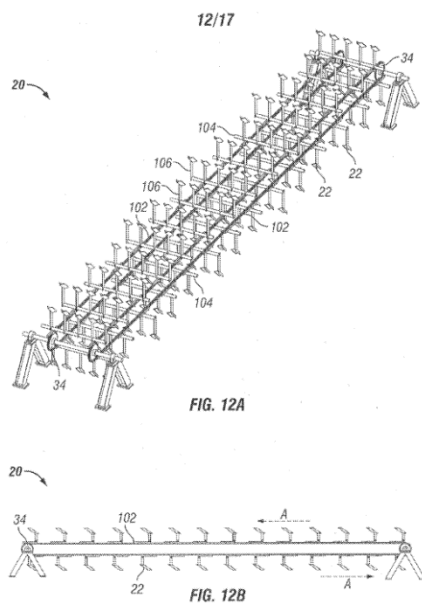


Figure 9. Conveying mechanism consisting of plows

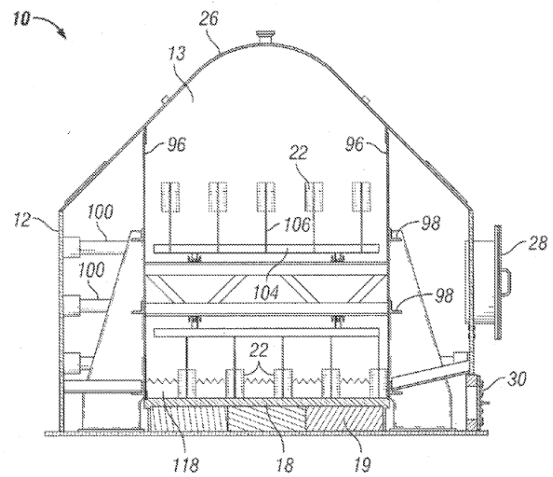


Figure 11. Cross-sectional view of furnace housing and components.

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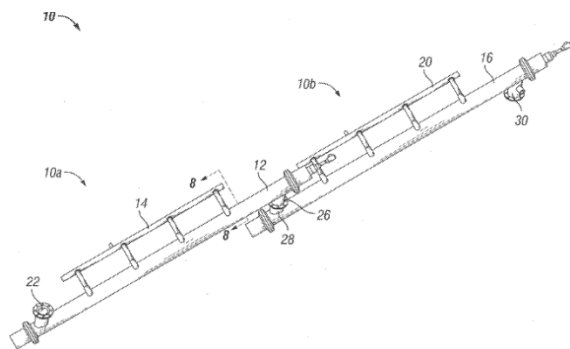


Figure 12. Two stage cooling system. Nitrogen is fed in the axial direction to each stage for direct cooling, and is removed through elements 14 and 20. Glycol provides indirect cooling. Coal enters at flange 22 and exits at 30.

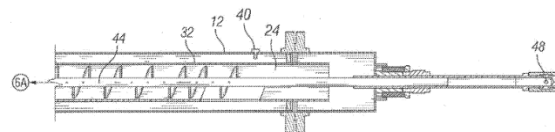


Figure 14. Cross sectional view of a single cooling unit. Nitrogen enters at element 48 and moves axially to the perforated screw mechanism that conveys char. Nitrogen contacts hot char after passing the perforations.

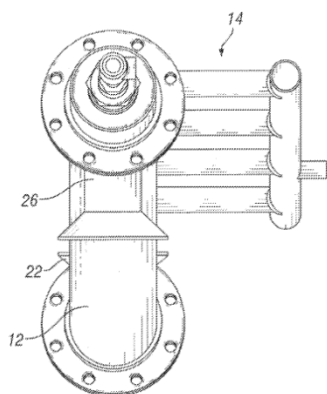


Figure 13. Side view of a single cooling unit. Nitrogen enters axially at the end of the larger cylinder (left) and leaves at the right of the smaller cylinder (right).

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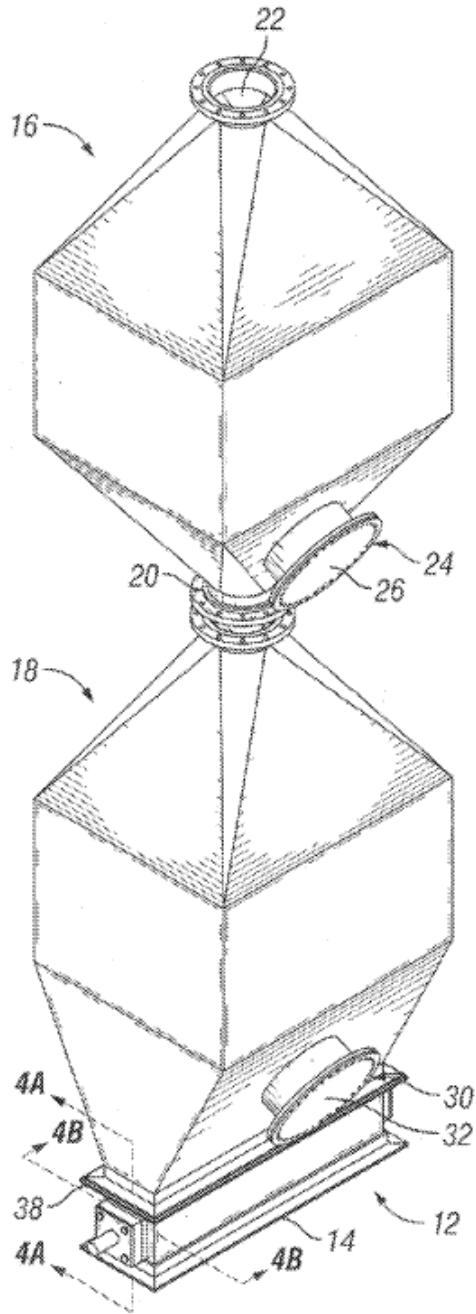


Figure 15. Two stage coal hopper with feeding/metering mechanism (bottom).

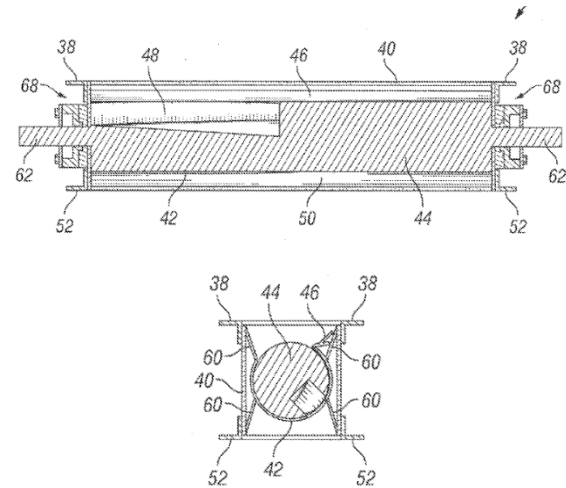


Figure 16. Rotary device for feeding and metering.

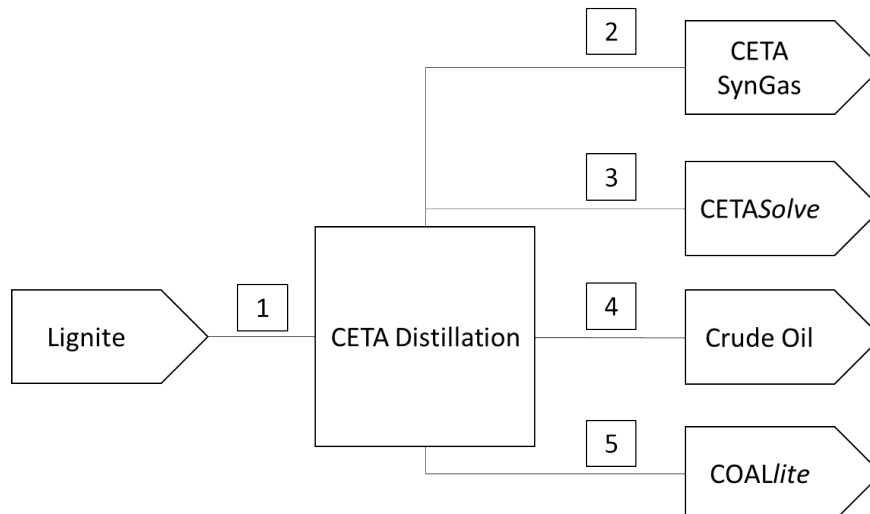
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Table 1. Summary of initial mass/elemental balance conducted during the site visit on August 10, 2017; the basis was a process flow diagram presented for a 500,000 TPY concept plant (Figure 3), and the documented lignite and product compositions presented to DOE in the CETA brochures. In addition, CETA's chief chemist stated that the solvent phase mass flow rate (Stream 3) is 32% of the Stream 1 mass flow rate and comprises 90-90% water; and thus the oil phase (Stream 4) is produced at 8% of the Stream 1 mass flow rate. Deviations shown in the column "OUT-IN" were discussed with the technical team. The root cause of deviation was identified as incomplete data from the analysis vendor (Avomeen) that is no longer being used. Updated composition data was requested by DOE so that the mass balance could attain closure and so that an energy balance could be enabled. Figure 1 is shown below for convenience.

Mass Balance Surrounding CETA Operation (August 10, 2017)							
	Lignite	SynGas	CETASolve	Crude Oil	COAllite		
stream:	1	2	3	4	5	OUT-IN	delta
Mass Flow [TPY]	493,420	74,013	157,894	39,474	222,039	-	0.0%
H2O	145,559		142,105	2,961	3,664	3,170	2.2%
Volatiles	144,079	69,349	15,789	36,513	30,242	7,815	5.4%
Fixed Carbon	135,789				120,345	(15,444)	-11.4%
Mercury	888				89	(799)	-90.0%
Total sulfur	3,799				2,398	(1,401)	-36.9%
Ash	68,092				70,009	1,917	2.8%

SUM: (4,743) TPY
of lignite feed: -0.96%



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Table 2. Summary of mass/elemental balances in CETA's effort to attain closure subsequent to August 10, 2017. Data are for a smaller sample of tests conducted than reported in the CETA's brochure given to DOE. CETA attributes the error in Volatile components to either (a) escape via the gas phase or (b) to being undetectable in the liquid phase. CETA attributes the error in Fixed Carbon to denaturing into gas and liquid components as well as to dispersion into the liquid stream. CETA states that mercury was not detectable in previous gas testing, and "estimates that the main portion of mercury presents in liquid stream and the remaining trace amount (non-detectable) is presented in the gas stream". SOURCE: confidential and proprietary correspondence received 8/25/2017.²⁶

	Total In (lb)	Total Out (lb)	Mass (lb)	%Δ
Mercury	0.000991598	0.000711856	0.000279742	28.21
Total Sulphur	42.97	41.31	1.65	3.85
Ash	758.57	770.68	-12.11	-2
Fixed Carbon	1516.04	1302.01	214.04	14
Volatile	1609.14	444.34	1164.81	72.39

REFERENCES

¹ LR Radovic, “Energy and Fuels in Society”, Primus (1998), Chapter 7;
<http://www.ems.psu.edu/~radovic/Chapter7.pdf>

² SP Schweinfurth, “Coal—A complex natural resource; an overview of factors affecting coal quality and use in the United States”, U.S. Geological Survey Circular 1143 (2003). Centerfold: “Coal byproducts in tree form showing basic chemicals as branches and derivative substances as twigs and leaves. The basic chemicals may be obtained from coal through heating in a closed container (destructive distillation); the derivatives require additional processing of those basic materials. One ton of bituminous coal roasted in an airtight oven (destructive distillation) produces approximately 1,300 to 1,500 pounds of coke, 8 to 10 gallons of coal tar, 3 gallons of light oil, 5 to 6 pounds of ammonia, and 9,500 to 11,000 cubic feet of gas. Modified from an undated public domain illustration provided by the Virginia Surface Mining and Reclamation Association, Inc. Norton, Va.”
<https://pubs.usgs.gov/circ/c1143/c1143.pdf>

³ Zhao *et al.* and literature cited within “Converting lignite to caking coal via hydro-modification in a subcritical water-CO system”, Fuel **167** (2016) 1-8.

⁴ Lignite coke is actively marketed, e.g. by Rheinbraun Brennstoff GmbH (RBB) and RWE Group;
<http://www.rwe.com/web/cms/en/610700/process-carbons/products/lignite-coke/>

⁵ Coalite and Chemical Products Limited, advertisement, accessed on 8/14/17 from HistoryWorld,
<http://www.historyworld.co.uk/advert.php?id=1518&offset=200&sort=0&l1=Household&l2>

⁶ Thomas Parker biography, Wikipedia, [https://en.wikipedia.org/wiki/Thomas_Parker_\(inventor\)](https://en.wikipedia.org/wiki/Thomas_Parker_(inventor)); and Coalite description, Wikipedia, <https://en.wikipedia.org/wiki/Coalite>

⁷ E Korpjaakko, “Review of the Niger Coal Carbonization Project”, The World Bank, Africa Region, publication 19839 (Oct 1994).

⁸ HR Batchelder, “Chemicals from Coal”, Ind. Eng. Chem. Res. Develop. **9** (1970) 341-343.

⁹ U.S. Department of Energy, “Clean Coal Technology Demonstration Program: Program Update 2001” (July 2002);
https://www.netl.doe.gov/File%20Library/Research/Coal/major%20demonstrations/program/cct_pgm_2001.pdf

¹⁰ DOE/NETL program publications, ENCOAL Mild Coal Gasification Project;
<https://www.netl.doe.gov/research/coal/major-demonstrations/clean-coal-technology-demonstration-program/bcpcfmng-encoal>

¹¹ I Schwager and TF Yen, “Coal-liquefaction products from major demonstration processes. 1. Separation and analysis”, Fuel **57** (1978) 100-104; [https://doi.org/10.1016/0016-2361\(78\)90106-0](https://doi.org/10.1016/0016-2361(78)90106-0)

¹² BusinessWire, “Evergreen Energy K-Fuel Cleaner Coal Technology Receives Major Chinese Government Endorsement” (May 15, 2009); <http://www.businesswire.com/news/home/20090515005176/en/Evergreen-Energy-K-Fuel%20AE-Cleaner-Coal-Technology-Receives>

¹³ DOE/NETL, “Direct Liquefaction Processes” website (accessed on 10/23/17),
<http://www.netl.doe.gov/research/Coal/energy-systems/gasification/gasifipedia/direct-liquefaction>

¹⁵ DOE/NETL, “Indirect Liquefaction Processes” website (accessed 10/23/17);

¹⁶ DOE/NETL, “Carbon Dioxide Capture Technology Options” website;

¹⁷ Y Tian, “Coal to Chemicals Industry in China”, National Institute of Clean and Low Carbon Energy (NICE), presentation at Woodrow Wilson International Center for Scholars (July 24, 2012);

¹⁸ JS Warwick, JP Frederick, “Refining coal-derived liquid from coal gasification, coking, and other coal processing operations”, assignee: MR&E. LTD. (Feb. 18, 2010) publication US 2010/0038288 A1.

¹⁹ RA Wolfe, CJ Im, RE Wright, “Method and apparatus for converting coal into liquid fuel and metallurgical coke”, assignee: Coal Technology Corporation (Sep. 29, 1992) patent number 5,151,159.

²⁰ RA Wolfe, “Pyrolyzer furnace apparatus and method for operation thereof”, assignee: Nucor Corp (Jun. 26, 2008) publication US 2008/0149471 A1.

²¹ U.S. DOE/NETL, “The ENCOAL Mild Coal Gasification Project: A DOE Assessment”, DOE/NETL-2002/1171 (March 2002).

²² The total acid number (TAN) is determined by the milligrams of potassium hydroxide required to neutralize the acid in one gram of oil; the units are mg KOH/gOil. Where TAN > 1 is deemed to be a high acid number. TAN is associated with corrosion risk.

²³ A Shafizadeh, G McAteer, J Sigmon, “High Acid Crudes” a ChevronTexaco presentation at Crude Oil Quality Group (2003);

²⁴ GPS coordinates: 31.704150, -96.160990

²⁵ For comparison to other processes: (A) the ENCOAL process that is described in reference heats the solids in the pyrolyzer to approximately 1000°F; (B) the maximum yield of lignite tar is attainable at 1200°F according to EJ Babcock, “Economic Methods of Utilizing Western Lignites”, DOI Bureau of Mines, Bulletin 89, Section “Methods of Utilizing Western Lignites”, p48;

¹⁴ “Project Data on Eastman Chemical Company’s Chemicals-from-Coal Complex in Kingsport, TN”, an Eastman Chemical Company Mass Balance Project, DOE-2004-17, which report prepared for the U.S. Department of Energy (March 2003) staff by request, <https://www.eia.doe.gov/File%20Library/research/coal/energy%20systems/gasification/Eastman-Chemicals-from-Coal-Complex.pdf> and “Acetyl Chemicals from Coal Gasification” an ACS commemorative booklet describing the Eastman Chemical facility in Kingsport (1995):

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Clean Energy Technology Association, Inc. (CETA)

Department of Energy Report on CETA's Technology (Dan Matuszak)

- The preliminary draft report dated 10/30/17 is devastating to our current efforts to commercialize our distillation technology; the author is clearly stating that we are still in the early phases of developing this technology and don't have the engineering and marketing analysis needed for commercialization; of course we have heard this assessment from other groups reviewing our technology (e.g. Exelon)
- However, the report does state that DOE/NETL could help CETA overcome these gaps and recommends that they provide their assistance to advance the technology
- The author does not believe what we have told him about the distillation technology and didn't take the time in Fairfield to fully understand and inspect our commercial distillation unit.
- The report is poorly constructed in the sense that it is trying to compare technologies that are not relevant to CETA's distillation technology, and reaches inaccurate observations and conclusions based on a combination of flawed comparisons and/or incomplete information
- We have the following options:
 - Do not legitimize the report with a response, and make sure it is never published (delay and never comment)
 - Negative overall response to Dan to question the legitimacy of the report in case it does surface at some point
 - Note: the report is so infused with "questionable" comments and inaccurate information that it would require a complete rewrite of the report to make it acceptable (probably not doable)

Full Name: Doug Matheney
Last Name: Matheney
First Name: Doug
Company: DOE
Business:
Email: Doug.Matheney@hq.doe.gov

From: Desouza, Shannon (CONTR)
Sent: Wednesday, July 19, 2017 10:46 AM CDT
To: Rose, Tom
CC: Hill, Roy; Matheney, Doug; Loman, Carol (CONTR); Cockerell, Cheryl
Subject: RE: Meeting With DOE and CETA 7/25
Attachments: OA.HQ FNVA Questionnaire Part 1.doc
Importance: High

Hi Tom,

Please have Ms. Ghadimkhani complete the attached form and send back to me by COB today.

Thank you,
Shannon Desouza
U.S. Department of Energy
(202) 586-6660

From: Desouza, Shannon (CONTR)
Sent: Wednesday, July 19, 2017 9:32 AM
To: 'Rose, Tom' <T.Rose@cetaenergy.com>
Cc: Hill, Roy <R.Hill@cetaenergy.com>; Matheney, Doug <Doug.Matheney@hq.doe.gov>; Loman, Carol (CONTR) <CAROL.LOMAN@HQ.DOE.GOV>; Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Subject: RE: Meeting With DOE and CETA 7/25

Hi Tom,

It should not be a problem. Do you know what country they are a citizen of? I will let you know what I will need for clearance asap.

Thank you,
Shannon

From: Rose, Tom [<mailto:T.Rose@cetaenergy.com>]
Sent: Wednesday, July 19, 2017 9:10 AM
To: Desouza, Shannon (CONTR) <Shannon.Desouza@Hq.Doe.Gov>
Cc: Hill, Roy <R.Hill@cetaenergy.com>; Matheney, Doug <Doug.Matheney@hq.doe.gov>; Loman, Carol (CONTR) <CAROL.LOMAN@HQ.DOE.GOV>; Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Subject: Re: Meeting With DOE and CETA 7/25

Yes.

She is our chemist and an integral part of our team needed for this meeting.

Please let me know as soon as possible if this is a problem

Tom

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: "Desouza, Shannon (CONTR)" <Shannon.Desouza@Hq.Doe.Gov>
Date: 7/19/17 7:38 AM (GMT-06:00)
To: "Rose, Tom" <T.Rose@cetaenergy.com>
Cc: "Hill, Roy" <R.Hill@cetaenergy.com>, "Matheney, Doug" <Doug.Matheney@hq.doe.gov>, "Loman, Carol (CONTR)" <CAROL.LOMAN@HQ.DOE.GOV>, "Cockerell, Cheryl" <C.Cockerell@cetaenergy.com>, "Loman, Carol (CONTR)" <CAROL.LOMAN@HQ.DOE.GOV>
Subject: RE: Meeting With DOE and CETA 7/25

Hi Tom,

Thank you for the information! Is Mr. Ghazaleh Ghadimkhani a non-U.S. citizen and if so, is he the only attendee that is a non-U.S. citizen? I have to find out what are NETL office will need for clearance.

Thank you,
Shannon

From: Rose, Tom [<mailto:T.Rose@cetaenergy.com>]
Sent: Tuesday, July 18, 2017 5:27 PM
To: Desouza, Shannon (CONTR) <Shannon.Desouza@Hq.Doe.Gov>
Cc: Hill, Roy <R.Hill@cetaenergy.com>; Matheney, Doug <Doug.Matheney@hq.doe.gov>; Loman, Carol (CONTR) <CAROL.LOMAN@HQ.DOE.GOV>; Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Subject: RE: Meeting With DOE and CETA 7/25

Shannon,

Here is the completed meeting request form for next week's meeting.

Please let me know if you have any other questions.

Tom Rose
Chief Executive Officer



Clean Energy Technology Association, Inc.
123 East Commerce Street
Fairfield, Texas 75840
t: 877.711.CETA (2382)
f: 903.389.4988
c: 214-717-1997
t.rose@CETAenergy.com
www.CETAenergy.com

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From: "Desouza, Shannon (CONTR)" <Shannon.Desouza@Hq.Doe.Gov>
Date: July 17, 2017 at 10:33:06 AM CDT
To: "R.Hill@cetaenergy.com" <R.Hill@cetaenergy.com>
Cc: "Loman, Carol (CONTR)" <CAROL.LOMAN@HQ.DOE.GOV>, "Matheney, Doug" <Doug.Matheney@hq.doe.gov>
Subject: Meeting With DOE and CETA 7/25

Hello Mr. Hill,

Please complete the meeting request form as well and send back to me asap.

Thank you,
Shannon Desouza
U.S. Department of Energy
(202) 586-6660

From: Matheney, Doug
Sent: Thursday, October 19, 2017 11:04 AM CDT
To: Hill, Roy
Subject: FW: CETA

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

-----Original Message-----

From: Matuszak, Daniel
Sent: Thursday, October 19, 2017 12:01 PM
To: Kokkinos, Angelos <Angelos.Kokkinos@hq.doe.gov>; Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: RE: CETA

That's the problem. I'm facilitating a call with CETA/NETL on Monday to see what the barriers are for the proper exchange of sample to be tested. Tom Rose (CETA) has had the action to sign some sample release forms but has not done so. NETL requires it in order to make some good faith analyses outside of a CREDA relationship.

-----Original Message-----

From: Kokkinos, Angelos
Sent: Thursday, October 19, 2017 11:57 AM
To: Matuszak, Daniel <Daniel.Matuszak@Hq.Doe.Gov>; Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: RE: CETA

Dan:

Do you also have any analysis on the samples you took or gave you?

-----Original Message-----

From: Matuszak, Daniel
Sent: Thursday, October 19, 2017 11:54 AM
To: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Cc: Kokkinos, Angelos <Angelos.Kokkinos@hq.doe.gov>
Subject: RE: CETA

Doug,

Yes. In support of my draft report and to provide a wider perspective, I collected some feedback from the NCC members after Roy Hill's presentation. I will include that separately with the draft, which I will send to Angelos for his review no later than Monday.

Dan

-----Original Message-----

From: Matheney, Doug
Sent: Thursday, October 19, 2017 11:00 AM
To: Matuszak, Daniel <Daniel.Matuszak@Hq.Doe.Gov>
Subject: CETA

Dan;
Would you please send me your anallis of your trip to Texas and the CETA project.
I need this as soon as you can send it.
Thanks for your help Dan.

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

From: Cockerell, Cheryl
Sent: Monday, July 10, 2017 3:33 PM CDT
To: Hill, Roy
Subject: Bio for Doug Matheny with the DOE

Roy,

Sally was able to find some information on Doug Matheny. See below for his Bio.

Thanks,
Cheryl

From: Sally Wallace
Sent: Monday, July 10, 2017 2:58 PM
To: Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Subject: RE: Bio for Doug Matheny with the DOE

Doug Matheny is listed as an assistant to U.S. Secretary of Energy, Rick Perry. He once worked as the state coordinator for the Count on Coal Initiative beginning April 2013 and as a coordinator for the Koch-funded front group, Americans for Prosperity (AFP) in Ohio's sixth congressional district beginning September 2013. Count on Coal is an advocacy initiative supported by the National Mining Association in order to promote coal. The association registered the initiative's website and ponied up considerable public relations funding for this allegedly "grassroots" campaign. Count on Coal and the National Mining Association ran the website CostlyPowerPlan.com set up in opposition to Obama's Clean Power Plan, which would have regulated emissions from coal-fired power plants. Both organizations also came out in opposition to the Office of Surface Mining and Reclamation Enforcement's Stream Rule, recently nullified by Congress and Trump, allowing coal companies to dump mining waste into U.S. streams. He was the Morgan County Commissioner from January 1983-December 1990 in McConnelsville, Ohio.

He is said to be one of many temporary staffers Trump has installed in federal agencies, including the Department of Interior, Department of Energy, the White House Office of Management and Budget and others.

Sally Wallace

Business Systems Manager
Clean Energy Technology Association, Inc.

From: Cockerell, Cheryl
Sent: Monday, July 10, 2017 11:32 AM
To: Sally Wallace
Subject: Bio for Doug Matheny with the DOE

Good Morning Sally,

Can you please get me any information you can find on Doug Matheny with the DOE. Prior work history, interest, political affiliations, etc.

Thank you!

Kindest Regards,

Cheryl Cockerell

Vice President, Corporate Development



Clean Energy Technology Association, Inc.

123 East Commerce Street

Fairfield, Texas 75840

t: 877.711.CETA (2382)

f: 903.389.4988

c: 512-636-2844

c.cockerell@CETAenergy.com

www.CETAenergy.com

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From: Rose, Tom
Sent: Friday, August 18, 2017 11:05 AM CDT
To: Matuszak, Daniel
CC: Cockerell, Cheryl; Hill, Roy; Long, Scooter; Ghazaleh Ghadimkhani; Thompson, Tracy
Subject: RE: CETA Information

Dan,

Thanks so much for coming to Fairfield. Our team really enjoyed your visit and the dialogue with you. We are very excited to be working with the DOE on projects to help around our country.

We have discussed your request and are working diligently to pull together what you want. We appreciate your efforts to clarify what information you needed in your detailed mass/compound/elemental balance for the CETA coal distillation process.

Our primary focus on this project transitioned to developing a working business model once we proved that our distillation process worked several years ago. Therefore, we directed our resources and efforts over the last several years on developing "average inputs and products" from variable raw coal compositions to design and build this commercial technology and its corresponding business model with multiple revenue streams.

Our Technical Team is now preparing the information you have requested and will be prepared to discuss in detail the results you need by the middle to end of next week.

Please let me know some times your busy schedule permits that you would be available for a conference call with our Technical Team, from Wednesday afternoon on next week.

All the best,

Tom Rose

Chief Executive Officer



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123 East Commerce Street
Fairfield, Texas 75840
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c: 214-717-1997

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www.CETAenergy.com

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From: Matuszak, Daniel [mailto:Daniel.Matuszak@Hq.Doe.Gov]
Sent: Tuesday, August 15, 2017 11:41 PM
To: Long, Scooter; Ghazaleh Ghadimkhani; Thompson, Tracy
Cc: Cockerell, Cheryl; Hill, Roy; Rose, Tom
Subject: RE: CETA Information

All,

Thanks again for inviting me to CETA, for the discussions, and for your hospitality. I've had the chance to reflect further on your process and am attaching my understanding in an Excel file with two sheets, version A and version B. Version A is what I understood upon walking out the door last week, based on the information that we discussed and that was shared in CETA brochures. Version B is my attempt to close the mass balance since then – I came closer but admit that it could be far from reality due to the possibility of multiple solutions on paper. I'd be grateful for any support in helping fill the gaps.

Sincerely,
Dan

From: Matuszak, Daniel
Sent: Thursday, August 10, 2017 9:10 PM
To: Cockerell, Cheryl <C.Cockerell@cetaenergy.com>; r.hill@cetaenergy.com; t.rose@cetaenergy.com; g.ghadimkhani@cetaenergy.com; s.long@cetaenergy.com; t.thompson@cetaenergy.com
Subject: RE: CETA Information

Cheryl, Roy, Tom,
Thank you for making today possible.

Scooter, Tracy, Ghazaleh,
Thank you for impressing me.

Ghazaleh,
Thank you for the Persian nougats. Please send updated compositions for each of the product streams so that I can better close the mass balance associated with the process diagram that I saw. I will keep everyone in suspense in DC until I redo my calculation using the more accurate

(non-Avomeen) data based on the ICMS methodology we discussed. Also please double check on solids content of liquid streams (another possible sink for Hg and S perhaps).

All - please call me if you need anything.

Kind regards,
Dan
(240) 252-8651

From: Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Date: Wednesday, Aug 09, 2017, 1:42 PM
To: Matuszak, Daniel <Daniel.Matuszak@Hq.Doe.Gov>
Subject: RE: CETA Information

We have you set to arrive at 9:20 in the morning. Please enter on the corner of Keechi and Commerce at 129 E Commerce Street. Our receptionist will be ready to greet you upon arrival. Safe travels and look forward to meeting tomorrow.

From: Matuszak, Daniel [<mailto:Daniel.Matuszak@Hq.Doe.Gov>]
Sent: Wednesday, August 9, 2017 1:40 PM
To: Cockerell, Cheryl <C.Cockerell@cetaenergy.com>
Subject: RE: CETA Information

Cheryl,

Thank you for relaying these. Please let me know when you'd like me to arrive at 123 East Commerce Street.

Dan

--

Dr. Daniel Matuszak
Clean Coal and Carbon Management
Office of Fossil Energy
U.S. Department of Energy
Office: 202-287-6915
Mobile: 240-252-8651

From: Cockerell, Cheryl [<mailto:C.Cockerell@cetaenergy.com>]
Sent: Tuesday, August 08, 2017 3:16 PM

To: Matuszak, Daniel <Daniel.Matuszak@Hq.Doe.Gov>

Subject: CETA Information

Dear Daniel,

Thank you for providing me with the draft agenda for the meeting on Thursday. I believe that is a good agenda and it will work well to ensure that we have adequate time to fully cover the technology.

Attached you will find 2 different presentations that we have submitted to the DOE.

The First attachment is the presentation that we presented while we were at the NETL office in Pittsburg. The 2nd presentation is a presentation that was put together specific for the Colstrip project in Montana that was sent to Andrew Hlasko for a report he is putting together.

Please let me know if you have any questions in regards to the material or other information needed prior to Thursday.

We look forward to having you at our facility on Thursday.

Kindest Regards,

Cheryl Cockerell

Vice President, Corporate Development



Clean Energy Technology Association, Inc.

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Fairfield, Texas 75840

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From: Rose, Tom
Sent: Tuesday, November 21, 2017 7:06 AM CST
To: Hill, Roy
Subject: Fwd: CETA Report Confidentiality

Does this information from DOE look ok to you? I wont respond to Angelos until i heaar from you.

Thanks. Tom

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: "Kokkinos, Angelos" <Angelos.Kokkinos@hq.doe.gov>

Date: 11/21/17 6:57 AM (GMT-06:00)

To: "Rose, Tom" <T.Rose@cetaenergy.com>

Subject: FW: CETA Report Confidentiality

Tom:

Take a look and see if this covers you and let me know.

Thanks

Angelos

From: jhuston@lti-global.com [mailto:jhuston@lti-global.com]

Sent: Monday, November 20, 2017 3:06 PM

To: Kokkinos, Angelos <Angelos.Kokkinos@hq.doe.gov>

Cc: Matuszak, Daniel <Daniel.Matuszak@Hq.Doe.Gov>; Matheney, Doug <Doug.Matheney@hq.doe.gov>; Giove, Joseph <Joseph.Giove@HQ.DOE.GOV>; Ron Engleman <rengleman@lti-global.com>

Subject: RE: CETA Report Confidentiality

Angelos,

After discussing with Dave, all information in regards to the CETA process review (data, documents, draft report, final report, etc.) has been deleted or returned to Dan Matuszak. As per our employee signed documents and our current contract with DOE, copies of confidentiality sections are below for reference, Dave will not retain, discuss, divulge, or disclose any information related to this report.

If you have any comments or questions, please let us know.

John

DE-FE0022594.0000

Attachment A – Terms and Conditions

1. DOE-H-2063 Confidentiality Of Information (OCT 2014) [LH and FFP Calls]

- Performance of work under this agreement may result in the Contractor having access to confidential information via written or electronic documents, or by virtue of having access to DOE's electronic or other systems. Such confidential information includes personally identifiable information (such as social security account numbers) or proprietary business, technical, or financial information belonging to the Government or other companies or organizations. The Contractor shall treat this information as confidential and agrees not to use this information for its own purposes, or to disclose the information to third parties, unless specifically authorized to do so in writing by the Contracting Officer.
- The restrictions set out in paragraph (a) above, however, do not apply to –
 - (1) Information which, at the time of receipt by the Contractor, is in the public domain;
 - (2) Information which, subsequent to receipt by the Contractor, becomes part of the public domain through no fault or action of the Contractor;
 - (3) Information which the Contractor can demonstrate was previously in its possession and was not acquired directly or indirectly as a result of access obtained by performing work under this contract;
 - (4) Information which the Contractor can demonstrate was received from a third party who did not require the Contractor to hold it in confidence; or
 - (5) Information which is subject to release under applicable law.
- The Contractor shall obtain a written agreement from each of its employees who are granted access to, or furnished with, confidential information, whereby the employee agrees that he or she will not discuss, divulge, or disclose any such information to any person or entity except those persons within the Contractor's organization directly concerned with the performance of the agreement. The agreement shall be in a form satisfactory to the Contracting Officer.
- (d) Upon request of the Contracting Officer, the Contractor agrees to execute an agreement with any party which provides confidential information to the Contractor pursuant to this agreement, or whose facilities the Contractor is given access to that restrict use and disclosure of confidential information obtained by the Contractor. A copy of the agreement, which shall include all material aspects of this clause, shall be provided to the Contracting Officer for approval.

- (e) Upon request of the Contracting Officer, the Contractor shall supply the Government with reports itemizing the confidential or proprietary information it receives under this agreement and identify the source (company, companies or other organizations) of the information.
- (f) The Contractor agrees to flow down this clause to all subcontracts issued under this agreement.

LTI Employment Agreement excerpt of document signed by Dave Muraskin

1. **CONFIDENTIAL INFORMATION.** I agree that it is of great importance to the success of LTI that confidential information regarding the business or business plans of LTI acquired by me prior or subsequent to the execution of this Agreement including, but not limited to, trade secrets, business secrets, technical secrets, proprietary information, methodologies, know-how, all forms of client information and other information not generally known to the public in any and all tangible embodiments thereof including, but not limited to, all hard copy or electronically/magnetically stored information in any format and copies of all or portions thereof which in any way are related to the business or business plans of employer ("Confidential Information") be treated with great care and improper disclosure or use be prevented. During my employment with LTI and after termination (whatever the reason), I shall maintain secret and shall not, directly or indirectly, disclose, use or permit the disclosure or use of any Confidential Information received, acquired or obtained during my employment with LTI unless such disclosure or use is reasonably necessary to fulfill my duties to LTI or unless such disclosure or use is consented to in advance writing by LTI. **I understand that LTI may receive under obligations of secrecy Confidential Information belonging to clients or other third parties, and that I shall treat such information with the same care as specified herein with respect to LTI's Confidential Information in accordance with this section.**

-----Original Message-----

From: "Kokkinos, Angelos" <Angelos.Kokkinos@hq.doe.gov>

Sent: Friday, November 17, 2017 1:13pm

To: "jhuston@lti-global.com" <jhuston@lti-global.com>

Cc: "Matuszak, Daniel" <Daniel.Matuszak@Hq.Doe.Gov>, "Matheney, Doug" <Doug.Matheney@hq.doe.gov>, "Giove, Joseph" <Joseph.Giove@HQ.DOE.GOV>

Subject: CETA Report Confidentiality

John:

I am following up to ensure that ***all*** information in regards to the CETA Process review (data, documents, draft report, final report, etc.) in David Muraskin's possession is returned to our Program Manager Dan Matuszak and Joe Giove. I would like to have a note from you that indicates that Dave Muraskin and LTI have return all copies (electronic or otherwise) to the Dept. of Energy. The note should also contain the following language:

“In addition we have retained no copies of this report and data under the Business Records Act of any State and of the United States of America and its Possessions.”

Let me know if you have any questions. Thank you very much for your cooperation.

Angelos Kokkinos

Director
Office of Advanced Fossil Technology Systems
Fossil Energy
Department of Energy
Washington, D.C. 20585

P: +1 (202) 287-5979
M: +1 (240) 702-6249

From: Doug Matheney
Sent: Thursday, November 30, 2017 4:00 PM CST
To: Hill, Roy
Subject: Fwd: CETA meeting

Does this work for you Roy?

Sent from my iPhone

Begin forwarded message:

From: "Matheney, Doug" <Doug.Matheney@hq.doe.gov>
Date: November 30, 2017 at 8:41:17 AM EST
To: "Doug Matheney (matheneyd@gmail.com)" <matheneyd@gmail.com>
Subject: FW: CETA meeting

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

-----Original Message-----

From: Hrkman, Lou [<mailto:Lou.Hrkman@mail.house.gov>]
Sent: Wednesday, November 29, 2017 4:12 PM
To: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: RE: CETA meeting

Doug,
All tentative , but working on getting everything confirmed. Looks like we'll have up to 5 members, most likely 4. Best day probably the 12th??, other dates are 13th and 14th in the morning. We'll have a 1 on 1 meeting with my boss before the bigger meeting with everyone. Once we firm up, I'll let you know.

Thanks
LOU

Lou Hrkman

Policy Adviser
Congressman David B. McKinley, P.E. (WV-01)
2239 Rayburn House Office Building
Washington, DC 20515
(202) 225-4172

-----Original Message-----

From: Matheney, Doug [<mailto:Doug.Matheney@hq.doe.gov>]
Sent: Friday, November 17, 2017 4:24 PM
To: Hrkman, Lou <Lou.Hrkman@mail.house.gov>
Subject: CETA meeting

Can we set a meeting for the week of 12/11?
They will come to town.

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

From: Cockerell, Cheryl
Sent: Wednesday, December 13, 2017 5:01 PM CST
To: Matheney, Doug
CC: Hill, Roy
Subject: Roy's Bio and CETA Summary
Attachments: Roy Hill Bio.pdf, CETA Executive Summary DRAFT 8-3-17 (002).pdf

Good Evening Doug,

As requested attached you will find Roy's Bio as well as a short summary on CETA. If you are looking for a more detailed summary we can get you something more detailed out tomorrow, just let me know if this works or if you need more.

Hope you have a great evening.

Kindest Regards,

Cheryl Cockerell

Vice President, Corporate Development



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Fairfield, Texas 75840
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f: 903.389.4988
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Biography
Roy William Hill
Of
Fairfield, Texas

Born on October 21st, 1947 to Parents F. R. Hill and Myldred Burleson Hill and became a 5th generation Texan on my Dad's side and a 6th generation Texan on my Mom's side.

While attending school from 5th grade through high school I worked for my Dad on the family farm and ranch and ultimately kept books for him in the office starting at age 16.

After finishing high school I attended Navarro Junior College in nearby Corsicana, Texas to receive my AA Degree in Business and attended for 2 years while going home from college to continue keeping books for my Dad. While attending Navarro I received my Real Estate Broker's License and began selling Real Estate from the family real estate office in Fairfield and assisting in developing subdivisions.

My Dad, myself and a couple of close family friends made the deal to bring Texas Power and Light (Later TXU, EFH, Luminant, and then Vistra) to Fairfield, Texas and build the first modern day Coal fired power generation plant to Texas, creating many jobs and stopping the move of all our bright children to the city in order to find meaningful and good paying work.

With the help of my banker and a local team we helped a pipeline builder acquire his first area natural gas pipeline and his first oil and gas leases to be drilled in Freestone County, Texas. He had developed a new modern version of technology first developed in New York State and then Oklahoma that he wanted to try with his old friend Mr. Phillips (Phillips Petroleum) called fracking. So, together we developed the modern technique called "fracking, utilized to this day". The gentleman's name was George Mitchell.

After Graduation from college and University I have earned multiple degrees in business and law.

During college I set up our Family's first evaluation of Lignite Coal Reserves for tax purposes and worked closely with Texas Power and Light (TP&L) on setting up their books as well.

I personally continued to assist TP&L with additional land and mining properties they needed to acquire in order to keep their programs running smoothly. I was then asked by Phillips Petroleum (old contact) and Dow Chemical to help them set up similar land and coal reserve acquisition programs at Fairfield and surrounding counties. This was successful and helped our area's residents for many years to come.

In 1973 I helped develop and set up one of the first oil and gas leasing program in our area for Humble Oil and Refining Company (Now ExxonMobil). These leases, drilling programs and fracking became highly successful and as a result much of the early natural gas production began to get well underway, creating many jobs for our area and our State. As a result I was asked to serve on the Board of the First National Bank as their energy director and advisor with full voting

privileges and became their first full director under the age of 40. First National later became Interfirst and then Republic of Dallas, Texas and I think now NCNB.

Beginning in 1974 I became the City Attorney for Fairfield, Texas and served in that capacity for a number of years thereafter.

At the start of 1975 in order to help our children I became involved with the Boy Scouts organization and served as Cub master for a number of years.

In 1976 I worked with Gulf Oil Company, now Chevron, and TOK, Inc. to develop and replace transmission lines systems throughout the State of Texas and elsewhere, handling layouts and property owner rights and damages without having to utilize Eminent Domain except one time while dealing with hundreds of property owners in a property area.

During the Mid 1970's thru the 1980's I served on the Trinity Improvement Board of Directors with Ben Carpenter (who developed Las Colinas) out of Dallas, Wes Wise the then Mayor of Dallas, Amon Carter, Jr. business man and owner of the Ft. Worth Star Telegram, Lowell Duncan who eventually ran the reorganization of American Airlines and David Broom who was originally a manager of the Trinity River Authority. During that time we sponsored, worked with the Corp. of Engineers, and were involved in the development of the Green Belt of the Trinity River near Dallas - Ft. Worth, building of Lake Livingston and ultimately Richland-Chambers Reservoir part 1 near Fairfield, and Corsicana Texas. Because of environmental concerns, the Environmental Community, and the Federal Court system, we were not able to achieve our ultimate goal of not only lake water reserves, but also making the Trinity River navigable again as it was in the 1850's. I did learn from this experience how much we all must be sensitive to the environment.

From 1980 thru 1987, I was part of a team that developed the Bossier and Cotton Valley Gas and Oil plays in Freestone County, Texas with Exxon, Anadarko, Phillips, XTO, Valence and later Marathon, along with a number of other Independents that became the largest "onshore" natural gas play at the time in the lower 48 United States. Many of those wells are still producing today. As a part of this, Anadarko constructed its new building at the Woodlands, Texas and made it their home.

I was a member of Rotary International for many years and served as the President of my local club when Gene Neal from Fairfield was the District Governor.

In the 1980's we developed a method to air drill for shallow to medium depth oil production with very little if any water needed to drill.

For the next 23 years I spent most of my career consulting, advising and in some instances managing environmental matters, field development of oil, gas and coal projects, financing, mergers and acquisitions for a number of major oil and coal companies in these sectors, plus refining, chemical and manufacturing sector and developed life time relationships with leaders in all of these industries, relationships which exist to this day.

Also in the 1980's I was a part of a team that formed Saxton Petroleum and Steward Exploration and developed the Rodessa formation for natural gas throughout East Texas, originating in Freestone County, Texas. This gas play lasted for over 15 years. My responsibilities were to work with coal producers, locate the fields, manage cost controls and to be in charge of actual drilling operations and legal work for this endeavor. TXO, later Marathon, Phillips, Humble/Exxon, Saxton, and a few other independents were all involved in this development program. I was Executive VP for one of the companies.

In the early 1990's I wrote my first book called "Welcome to the Oil Business" to give property owners and oil companies a guide book as to how to respectfully deal with each other during the leasing, drilling and operational phases of field development so as to avoid the needless cost of Litigation and Mediation. It was for many years the standard used by oil companies and large landowners to address the issues of each area of development. In that book I developed a long form lease that is utilized today as a guide book to the development of a comprehensive lease. The mediation clause in the lease is now used in many other industries as their mediation contract clause. It was once referred to as "the Hill lease form."

My travels have taken me to many places during this time. And I have cultivated relationships during these travels with leaders in key financial institutions and advise them presently relative to the fossil fuels industries.

In 2004 voters elected me Mayor of my home town against the incumbent and others. I have served in that capacity ever since and am still the Mayor of my small town of Fairfield, Texas to this day and consider myself a "servant of the people."

I sought office with a promise "it is all about the kids as they are our future." I have tried very hard to live by that standard to help maintain, create new good paying jobs so that a community's children could stay at home or return home after college or service to our Country and find a happy place to live out their years with their families.

Since becoming Mayor of Fairfield we are now one of 85 public water supplies in the State of Texas that are considered "Superior Water Supply" rating, which is the highest rating you can have in Texas. We have an A-bond rating and will be the only city in Texas within the next year with no debt. Our utility rates are in the lowest 5% in the State, and our Road and Bridge fund will have completely reworked all our infrastructure, roads, water and waste water systems within 2 to 3 more years. Our current property tax rate is 35.8 cents per \$100 evaluation, which is very low, and as soon as we complete new tenants in our rather large industrial park, we intend to have a tax rollback election and be the only city in Texas with no property taxes to our citizens at all. We have learned to manage our government affairs by utilizing sales tax we generate so as to not penalize our people. Since becoming Mayor, even with unknown events, we have always tried to have a balanced budget.

Our City became one of the first in Our State to go back to live nativity at Christmas for our celebration. Fairfield is considered one of the top 10 stops for Christmas activities and lighting in the State of Texas. We resumed opening all meetings with prayer to God and the pledges to our State and the American Flag.

I've begun regular town hall meetings which many states are now doing. We call them "Shoot the Mayor."

After becoming the Mayor I was asked on numerous occasions to be an advocate to explain how the fossil fuels industry can continue to benefit mankind and utilize our entire God given resources and still be able to conform to the ever changing environmental community. I have testified before various commissions and boards around our Country in such places as for example TCEQ, Railroad commissions, PUC, FERC just to name a few. Most of my time I found myself almost alone testifying as an anchor against larger city government representatives, mayors and the environmental community.

I advised and helped set up some of the first successful MLP's with IRS approval.

In mid-2005 thru 2008 I was part of organizing Texas for Affordable and Reliable Power (TARP) to advocate that we needed to use both natural gas and coal as raw fuel sources for the generation of electric power to meet ERCOT needs and margins at reasonable prices for the consumers of our State. I was President of this organization from its inception.

What I was told after attending all those many hearings on one of my last trips out of Austin in 2008 was that "someone better figure out how to deal with all these environmental issues as they are not going to go away and neither are those that advocate them."

So, I came home realizing that one of our primary employers was in "harm's way" and if we did not come up with a solution there would be a very large thud in our economy when we started losing all those jobs from coal power generation and the shutdown of our mines in Texas and other areas of the USA along with not having enough supply of electricity to meet the reliability needs of Our Country.

We started Clean Energy Technology Association, Inc., a Texas C Corporation, (CETA) to try to find a set of solutions to environmental regulations we felt would be coming from the EPA and various lobbies by the environmental community. We knew that whatever we came up with had to reduce NO_x, SO_x, sulfur, fly ash, mercury and CO₂ to meet those new standards, and it had to make money. It was our goal to not require government subsidies to make it work, and it had to save jobs and create new "green jobs" as well.

With myself and a few close friends we put up funds that were entrusted to me to try to solve this problem. To date we have spent almost \$200 million dollars to get it to this point in time. We have accomplished much in our endeavors thanks to God.

Our company has hired some of the brightest minds from around the world and half of our senior officer core are female. Our Team believed that nothing was impossible, and all they wanted to know was what was their job, how long they had to get it done and what was their budget. I am so proud of our guys as they have accomplished so much for mankind.

We now have our own patented technology like no other in the world. We have found that we can subdivide coal into many useful products, including heavy sweet low sulfur oil, chemical solvents

and industrial water that can be used for drilling, fracking, secondary recovery and CO₂ absorption, valuable rich in hydrogen syn-gas and a product we have trade marked as " **COALLite™**." We do not use fresh water. We create chemical solvents to replace oilfield needed liquids and reduce fresh water consumption instead.

In addition the **COALLite™** product can be burned in power plant boilers and other manufacturing and can, when properly processed, be used as a potential substitute for Met-Coke in many instances. Our coal lite by-product can be used as a clean replacement fuel for those that utilize coal as a raw fuel source and help meet their EPA standards starting currently in 2018 and to follow. **COALLite™** is higher in BTU's, does not absorb much water, has limited particle dust, does not spontaneously combust and has much more marketable bottom ash with reductions in fly ash when used. It can be used without installation of other costly equipment, and one of our plants pays for itself in 5 to 7 years with a 25 to 30 year life expectancy, subject to routine maintenance of no more than 5% per year.

We have tested our processes, except CO₂, for well over 5 years in a commercial unit process, knowing we can be instrumental in meeting EPA standards. We are now in full scale development of commercial CO₂ units as well for projects in the power and natural gas industry as an absorption technology using our chemical solvents as a part of our absorption process.

Research has also been done early on for us by large private labs who helped us develop the technology in the Petro-Chemical industry. All our test and lab results are available for review as needed, subject to proper NDA, as well as our independent environmental engineering firm results.

Today we are ready to share this technology with our Country to help protect the environment, preserve and protect jobs and communities, create new jobs, utilize all our Natural Resources without importing products and help us to become a Country of net exports in the fossil fuels industry, including coal.

Some of my hobbies include:

Organizing the providing of scholarships to children who wish to attend college and cannot afford but need to go. Our scholarships are mostly in engineering, journalism, medical, research, art therapy and legal;

New Leash on Life to help animals find homes so they do not have to be put to sleep;

Providing things for children to do growing up so they have a good childhood. Soccer, baseball, children in 4-H and FFA, city parks equipment, fairs and teenage rodeos are examples.

Fishing and bird hunting;

Gardening;

Music, Movies and Theatre;

Writing. I just finished my second book, and it will be available on I and EBooks and in hard and paper back in late Winter of 2017-2108. It is entitled "America Stand Tall" a guide book for tomorrow. It is a book about the values on which this Country was founded and how to restore our Country to greatness again.

Helped organize and acquire 501 c (3) status for Cancer Society.

With the help of many others helped put in place and organize drug rehab programs in Texas.

From: Matheney, Doug
Sent: Monday, January 8, 2018 3:46 PM CST
To: Hill, Roy
Subject: FW: Roy Hill Meeting

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

From: Brown, Kaitlin [<mailto:Kaitlin.Brown@mail.house.gov>]
Sent: Monday, January 08, 2018 4:46 PM
To: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: RE: Roy Hill Meeting

Great, we will see you all then in our office (2239 Rayburn House Office Building).

Thanks so much!

Best,
Katie

From: Matheney, Doug [<mailto:Doug.Matheney@hq.doe.gov>]
Sent: Monday, January 8, 2018 4:45 PM
To: Brown, Kaitlin <Kaitlin.Brown@mail.house.gov>
Subject: RE: Roy Hill Meeting

Yes.that will work.

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

From: Brown, Kaitlin [<mailto:Kaitlin.Brown@mail.house.gov>]
Sent: Monday, January 08, 2018 4:44 PM

To: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: RE: Roy Hill Meeting

Hi Doug,

Per Lou's email, would Mr. Hill be available to meet with Mr. McKinley at 4:00 PM on Wednesday, January 17th?

Thanks so much!

Best,
Katie

From: Hrkman, Lou
Sent: Thursday, January 4, 2018 3:55 PM
To: Brown, Kaitlin <Kaitlin.Brown@mail.house.gov>
Cc: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: Roy Hill Meeting

Katie,

Please set up a meeting with DBM on Jan 17th in the afternoon to meet with Roy Hill. This was the meeting we had to cancel back in December with the other members. This will be a 1 on 1 meeting , no other members. Doug Matheney is copied on this, he will also attend and is your contact if you need anything else.

Thanks
LOU

Lou Hrkman
Policy Adviser
Congressman David B. McKinley, P.E. (WV-01)
2239 Rayburn House Office Building
Washington, DC 20515
(202) 225-4172



From: Matheney, Doug
Sent: Wednesday, January 24, 2018 1:28 PM CST
To: Hill, Roy
Subject: FW: CETA

Doug
Douglas Matheney
Special Advisor to the Secretary
Office of Fossil Energy
Office: (202) 287-6280
Cell: (240) 474-8017
Doug.Matheney@hq.doe.gov

From: Hrkman, Lou [mailto:Lou.Hrkman@mail.house.gov]
Sent: Monday, January 22, 2018 5:40 PM
To: Matheney, Doug <Doug.Matheney@hq.doe.gov>
Subject: CETA

Doug,
During the meeting, Roy mentioned looking for money at DOE to test different types of coal. I think he said, just a few million dollars. Is there a pot of money at DOE you are targeting? Would a letter from our office help?

Let me know your thoughts,
Thanks
LOU

Lou Hrkman
Policy Adviser
Congressman David B. McKinley, P.E. (WV-01)
2239 Rayburn House Office Building
Washington, DC 20515
(202) 225-4172



From: Matheney, Doug
Sent: Monday, August 5, 2019 12:44 PM CDT
To: Hill, Roy
Subject: FW: Final Appalachia Report
Attachments: June_11_App_Workshop FINAL Report.pdf

Doug
 Douglas Matheney
 Director of Labor Outreach
 Office of Congressional and Intergovernmental Affairs
 Office: (202) 287-6280
 Cell: (240) 474-8017
 Doug.Matheney@hq.doe.gov

From: Zelek, Charles
Sent: Monday, August 05, 2019 1:08 PM
To: Matheney, Doug <doug.matheney@hq.doe.gov>
Subject: FW: Final Appalachia Report

Doug,
 You should send to Mr Hill. It could help him frame the market for CO2/his solvent, relative to what we discussed over lunch a few weeks ago.

His people might find it interesting and Bob indicates it's ok to send around.
 Just a suggestion.

Thanks!

From: Ivy, Robert <robert.ivy@hq.doe.gov>
Date: Monday, Aug 05, 2019, 8:45 AM
To: Hrkman, Lou <lou.hrkman@hq.doe.gov>, Kokkinos, Angelos <angelos.kokkinos@hq.doe.gov>, Daniels, Jarad <jarad.daniels@hq.doe.gov>, Bennett, Shawn <shawn.bennett@hq.doe.gov>
Cc: Matheney, Doug <doug.matheney@hq.doe.gov>, Vincent, Kenneth <kenneth.vincent@hq.doe.gov>, Moorman, Kyle <kyle.moorman@hq.doe.gov>, Peay, Ryan <ryan.peay@hq.doe.gov>, Litynski, John <john.litynski@hq.doe.gov>, Ackiewicz, Mark <mark.ackiewicz@hq.doe.gov>, Damiani, Darin <darin.damiani@hq.doe.gov>, Karimjee, Anhar <anhar.karimjee@hq.doe.gov>, Forbes, Sarah <sarah.forbes@hq.doe.gov>, Zelek, Charles <charles.zelek@hq.doe.gov>
Subject: Final Appalachia Report

Folks,
 Attached, please find the final report on accelerating CO2 usage in Appalachia.
 Increased gas production looks to be the best market in the region.

Let me know if you have any questions or if you all would like for me to schedule a briefing on the work.
Feel free to forward to folks.

V/R

Bob

Robert G Ivy
Senior Advisor
Office of Fossil Energy (FE-20)
Department of Energy
Tel: 202-586-0809
Cell: 301-204-9240

From: Hill, Roy
Sent: Thursday, September 19, 2019 3:19 PM CDT
To: Michelle Childs
BCC: Hill, Roy; Doug Matheney; Moore, Michelle; Edwina; Jessica Growden
Subject: Fwd: Possible Relationships

Roy W. Hill
President and Chairman of the Board
Clean Energy Technology Association
123 East Commerce Street
Fairfield, Texas 75840
Office - (877)711-CETA (2382)
Cell - (903)390-0252
Fax - (903)389-6599

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Begin forwarded message:

From: "Hill, Roy" <R.Hill@cetaenergy.com>
Date: September 19, 2019 at 3:18:22 PM CDT
To: Edwina <edwinahill@comcast.net>
Subject: Fwd: Possible Relationships

Roy W. Hill
President and Chairman of the Board
Clean Energy Technology Association
123 East Commerce Street
Fairfield, Texas 75840
Office - (877)711-CETA (2382)
Cell - (903)390-0252
Fax - (903)389-6599

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delete this email message and any attachments from your system or destroy any facsimile you may receive.

Begin forwarded message:

From: "Carey, Michael" <mcarey@coalsource.com>
Date: September 19, 2019 at 12:33:13 PM CDT
To: "Hill, Roy" <R.Hill@cetaenergy.com>
Subject: RE: Possible Relationships

Mr. Hill,

Thank you for your note. I will get it to the right people at our company. Thank you again.

Mike

-----Original Message-----

From: Hill, Roy <R.Hill@cetaenergy.com>
Sent: Thursday, September 19, 2019 12:45 PM
To: Carey, Michael <mcarey@coalsource.com>
Subject: Possible Relationships

CAUTION: This email originated from outside of Murray Energy. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Morning Mr. Carey,

I am introducing myself thru a mutual friend.

I believe in God, am a capitalist, a Republican, believe in the Democracy, want to preserve jobs, create new green jobs, help with the environment along the way, use all our natural resources to the fullest extent possible and make money in the process without the aid of the federal government. I am a workaholic.

And yes I voted for President Trump.

Just a little background on me personally.

As to my career, for 52 years I have been in the fossil fuels business primarily in the USA. My work has been with coal, oil and gas for the most part. I have worked with a number of major companies over the years but never had the pleasure of working with you, Mr. Murray or your team.

My father and I, along with several others, were responsible for having the first modern

day coal plant in Texas built and operational in 1971 which help created needed jobs and actually kept our small town of Fairfield alive at the time until we were also able some years later in the early 1980's to bring in lots of oil and gas production to our area.

In the early 2000's I was asked to run for Mayor of our small Texas town as it was getting financilly out of hand. We lowered utilities rates by 1/3 and never went up until I left office last year. Taxes were lowered to \$0.36 per \$100.00 evaluation and remained flat as long as I was Mayor. The Cities debt was almost completely paid off and we learned how to operate with a theory of "what we need vs. what we want". It worked and we added more miles of new streets and a first class fire and police and other emergency services group along with a first class major hospital and school system.

As the coal wars begin to reach Texas with the environmental community I was asked as a business man with experience and as the Mayor in the 2000's to testify about the environmment and how Texas Coal fired power generation has been a life blood for our State at the time before TCEQ, EPA, Railroad commissions, and other related panels with subject interest. We were able to keep alot of plants and mines open for another 10 years plus.

What I discovered during all this testimony is that the environmental community had gOTTEN organized and was now well funded for political purposes most of all. And if someone did not do something to fight back we were all going to wake up and coal mining, power generation using coal and US steel making using coked coal was going to soon disappear with the goal in mind they had to do away with all fossile fuels entirely. This has been both your and my life's work. Along with the loss of so many needed jobs which is coming our way now way too fast.

To that end about 10 plus years ago, we begin to look for a way that would help clean up the use of carbon based fuels as a fuel source, that would make money without Government assistance and at the same time preserve and create new jobs as well.

We were successful in our endeavor. Our now patented technology can now do the following things that helps our industry:

(1) - Take any form of coal in the USA (we have run them all along with different grades and mines around the Country) and create a coal fuel that is less of a carbon footprint in that it has almost no mercury, the ash is converted to bottom ash when burned (which has a good market), the BTU ratio is much higher which means you have to burn less to get the same heating values which reduces NOX and SOX when used, the volatiles and moisture are mostly removed so the end coal product, which we have trademarked as "Coallite", does not spontaneously combust or absorb much water in transportation. We have also found a number of ways to manage successfully the sulfur content as needed as well;

(2) - Our process is "cookie cutter" technology basically meaning we just add more units as needed for our projects. It low temp (under 1,500 degress F.) and low pressure (under 5

psi) all electric and a closed loop system which means you can get air permits for our technology "By Rule" and you do not have to go through 2 years of permitting for units as we only use a flare during start up or shut down of our units and have no other air issues during operation; ;

(3) - We have also discovered we can take poor grades of coal when blended properly and make it into either "near coke or coked" quality coal (Not green coke) at a good price so as to increase the margins of profit for the actual coal producer;

(4) - In the distilling and separation process with our equipment we also produce a heavy sweet low sulfur oil that is in short supply around the world and sells at much higher prices than Brent or WTI and is used for some rather high end products;

(5) - In addition, We also produce an additional water based set of chemicals solvents that we have trademarked as "CETASolve" which is naturally blended and can capture CO₂ out of any gas stream. Once the CO₂ is captured in our solvent and absorbed it can then be taken to the oil patch for use in secondary recovery of hydrocarbons, as well as drilling and fracking and reduce the need for fresh water in the process;

(6) - Lastly we produce a Syngas which can be contained and that is very high in Hydrogen and Nitrogen. There is a good market place for this product besides just using it for power generation;

(7) - Recently we have at the request of others been testing GOB et al from Ohio and Pennsylvania and have found in addition to the foregoing we can also find and extract rare earth elements as an additional income market as well.

We began a few years ago looking at a NE supply partner to work with us on Coals in WV, Ohio, Kentucky, Pennsylvania, and Illinois. I met with WV folks about a year plus ago and it got bogged down in politics and has gone nowhere as yet.

Based upon Mr. Murray's history I am hopeful to arrange a meeting with him and your team and see what we can develop together for the good of our Country up your way. I believe we are a fit for each other from what I can tell.

Even though our company is small (under a B.) we have no debt at this time. Our company is SEC registered but not public. I own 80% of the company outright.

We have access to large amounts of investment and direct loan funds or capital from institutions that understand the coal business and do not consider it just another four letter word. These are some of the largest in the world and can move very quickly as needed and we deal with the top levels of each.

These institutions are already into funding of power plants, wirelines. Mining equipment and coal reserves scattered all over the world at present. They seem to like what we are doing well and want to get more involved and help develop larger projects with which we chose to be involved in the USA. We want to do a NE project now and can see that we

need to visit in person very soon to see what can be developed together.

I would like to see about setting up a call sometime next week (other than Wednesday) to introduce ourselves to each other and discuss some possibilities. Once that has taken place, I would like to look at a meeting the following week or 10 days after the call for an in-person meeting with your Team and Mr. Murray.

Have a great day.

Kindest regards,

Roy

Roy W. Hill
President and Chairman of the Board
Clean Energy Technology Association, Inc.
123 East Commerce Street
Fairfield, Texas 75840
Office - (877) 711-CETA (2382)
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From: Hill, Roy
Sent: Sunday, October 18, 2020 5:47 PM CDT
To: Doug Matheney
Subject: COAL USE.

COAL USE AND ITS BEGINNINGS IN THE USA

As the Nation deals with questions pertaining to climate change in whatever form it may exist and energy independence, coal usage still remains in the headlines.

The coal industry in the USA has a long history that ultimately is intertwined with the rise of the industrial economy and even the emergence of labor unions.

People have been using coal for thousands of years. Coal even heated homes of the ancient Romans.

The first known use of coal in the USA was by the Hopi Indians in the American Southwest when they started using coal as a fuel in the early 1300s for baking pottery, cooking food and heating.

As English settlers began to arrive on the scene in the 1600s they discovered coal in Eastern North America in 1673, but commercial coal mining did not begin until around 1740. It remained a small industry until the early 1800s however because American settlers preferred to use the plentiful supplies of wood.

THE RISE OF COAL AND PENNSYLVANIA

The American coal industry actually began in Virginia with the exploitation of coal in the Richmond Basin. Early economic nationalists, including Alexander Hamilton, thought that coal could help drive national growth and development.

Meanwhile in Pennsylvania, miners in the mid 1700s began extracting a higher grade of coal with a higher carbon content known as Anthracite on an industrial scale. It rapidly became the common source of residential heating in Philadelphia and a number of other northeastern cities. By the 1840's, Anthracite became the standard form of fuel throughout the Eastern Seaboard.

Another form of coal was also discovered in Pennsylvania in the 1760's called Bituminous coal at "Coal Hill" in Washington County across the Monongahela River from Pittsburgh in outcrops along the hillsides. It was transported to Fort Pitt.

It began being used for the Colonial making of iron and the industry that followed. The Pittsburgh Coal Seam, especially around the Connellsville District was rated at the time as the best coal in the Nation for making "Coke". One of its first uses was in an iron furnace in Fayette County.

By the 1830's Pittsburgh was dubbed as the "Smoky City" because of its heavy use of coal for heating. About 400 tons a day was consumed at the time.

During the last half of the nineteenth century, the demand for steel generated by the explosive expansion of the rail industry in our Nation increased the use of coal. Coked Coal was used to make steel. The number of beehive ovens in Pittsburgh seam between 1870 and 1905 skyrocketed from about 200 ovens in the early days to almost 31,000 as demand continued to rise for coked coal by the iron and steel industries. The number of ovens seemed to peak in about 1910 at 48,000 ovens. The production of coal and coal mining itself increased along with the demand.

Over a billion tons of bituminous coal has been mined in 21 Pennsylvania Counties (primarily western Counties) over the last 200 years. It was about 1/4th of all coal mined in the USA. Even today with all the changes in coal mining in the USA and around the world, Pennsylvania is still even today ranked as one of the biggest coal-producing States in the USA.

CURRENT COAL RESERVES, PRODUCTION AND USAGE

US coal production decreased last year by 6.6% to only 706.3 million tons and along with it mining capacity decreased by an additional 1.1%.

US coal consumption decreased by 14.8% to 586.5 million tons per year. Of the remaining utilized coal presently in the USA 91.8% is currently consumed by the electric power sector.

TODAY The largest coal form utilized in the US IS bituminous coal, then sub-bituminous (such as Powder River Basin), lignite and and lastly anthracite.

The largest consumer of coal today is China in first place, India in second place, and US in 3rd place.

We are NOW exporting over 50 million tons a year out of the US for sale.

Stock piles of mined but unsold coal amounted to 165.7 million tons last year. This is a 7.2% increase than the same period in 2018.

We have lost 779 jobs last year for our fellow coal miners and now we only have 52,804 Americans still working in our industry at the end of 2019.

The coal reserves in the US are 22.31% of the World's Supply and the largest coal reserve country in the world at 254,197 billion tons of proven reserves.

IS THE COAL INDUSTRY DEAD OR SLOWLY SLIPPING AWAY?

There are those that say Our Industry is slowly slipping away from us. But is it really?

The Statistics cited above would seem to say it is to all of us here.

Politics such as variations of "The Green New Deal" would also seem to support that conclusion as well.

Many public companies are placing more and more environmentalist on their boards of directors in hopes of staying out of the "Court House" to protect their shareholders over environmental concerns.

Before we say "it is over" let's take a look at a few things that are currently produced from coal and its by-products.

USES OF COAL AND ITS BY-PRODUCTS

(1) Of course we all here know that coal is used to make steel and iron in almost 70% of all cases;

(2) And It is also a major source of raw fuel for power generation in the US and world wide.

BUT THE LIST DOES NOT STOP THERE.

Many other things are done with the By-Products Produced from Coal:

(3) Pharmaceutical products;

(4) Aspirin;

(5) Masonry cement;

(6) Essential oils;

- (7) Solvents of many sorts;
- (8) Soap;
- (9) Ammonia salts;
- (10) Agriculture Fertilizers;
- (11) Water purification;
- (12) Grilling;
- (13) Manufacture of chemicals we use everyday;
- (14) Dyes;
- (15) Certain Paints;
- (16) Plastics;
- (17) Fibres for making rayon and nylon;
- (18) Paper Industry;
- (19) Making of aluminium;
- (20) Activated Carbon;
- (21) Carbon Fibre;
- (22) Silicon metals for rubber, sealants, adhesives, lubricants, coating and polishes;
- (23) Used in producing silicon compounds as well a silicon wafers used in photovoltaic solar cells and electronic semiconductors;
- (24) Cosmetics;
- (25) Glass making;
- (26) Production of Hydrogen and Nitrogen;
- (27) And we are just beginning to discover that coal and the seams surrounding it contain elements of Rare Earth which has even more uses with our phones, laptops, iPads and so on.

SO IS COAL REALLY GOING TO GO AWAY FOR LONG?

THE ANSWER COULD BE “YES” OR “NO”

The answer is “yes” if we want to do away with the above short list of important things in our everyday life made from coal and its by-products along with a list of over 1,000 other uses.

THE ANSWER IS “NO” IF WE WANT TO CONTINUE USING ANY OF THE ABOVE LISTED PRODUCTS FOR ANY PURPOSE IN OUR LIFE.

I AM SURE CHINA WOULD LAUGH ALL THE WAY TO “THE BANK” IF WE DECIDED TO NOT USE THE VAST RESERVES OF COAL WE HAVE IN THIS COUNTRY.

There is lots of work going on in this Country today to help with the environment including in the coal industry. But shutting down our Country while that is happening is a huge mistake.

THAT ALL BEING SAID, PRESIDENT TRUMP IS WORKING VERY HARD TO OPEN UP THE COAL MARKET FOR MORE EXPORTS OF COAL AND FIGHT FOR YOUR VERY WAY OF LIFE.

HE DOES NOT WANT TO SHUT IT DOWN BUT INCREASE THE JOBS IN THIS INDUSTRY INSTEAD.

AS MORE BUSINESSES CONTINUE TO RETURN HOME OR RELOCATE IN THE USA, BECAUSE OF OUR CURRENT LOWER TAX RATE AND BUSINESS FRIENDLY ENVIRONMENT ESTABLISHED OVER THE LAST THREE AND ONE HALF YEARS, COAL WILL CONTINUE TO KEEP IT'S PLACE IN THE FUTURE OF THIS COUNTRY.

WE NEED MORE COAL USE, NOT LESS, FOR RAW MATERIALS FOR THOSE RETURNING HOME OR RELOCATING HERE.

“WE HAVE TO HAVE COAL FOR OUR VERY WAY OF LIFE”

THE ANSWER IS SIMPLE:

“KEEP TRUMP AND PENCE IN OFFICE AND LET THEM FINISH THE JOB ALONG WITH GREATER SUPPORT IN CONGRESS TO MAKE IT HAPPEN SOONER.”

Roy W. Hill
President and Chairman of the Board
Clean Energy Technology Association, Inc.
123 East Commerce Street
Fairfield, Texas 75840
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Cell - (903) 390-0252
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From: Doug Matheney
Sent: Tuesday, April 27, 2021 8:18 AM CDT
To: Hill, Roy
Subject: Missing in action

Good morning Roy,

I have not heard from you in quite a long time. I hope all is well with you and your family. I am beginning to wonder if I did something that upset you or something has gone very wrong in your life. If not I would like to offer a compromise.

I really want to move to Texas more specifically the Fairfield area and work with you to help grow your business. I do not have to make that kind of money that you and I talked about a year and a half ago. I would like to make a very good living .You and I probably have a difference of opinion about what a very good living is, I would like to explain that to you on the telephone. Providing that you are unable to hire me at this time could you please help me find a good job in Texas?

I really would like to hear from you Roy, it's unlike you not to talk to me.

It will be good to catch up , look forward to hearing from you soon.

Love ya

Doug

Sent from my iPhone

From: Doug Matheney
Sent: Friday, April 7, 2023 9:19 AM CDT
To: Rusty Bell
CC: Kendra Anderson
Subject: Re: Coal company contacts

Thank you Rusty.

CETA is a well established company. They are looking for an opportunity to expand their current business.

We will contact you next week to discuss the possibility of face to face meetings.

Thanks again Rusty.

Doug

Sent from my iPhone

On Apr 7, 2023, at 9:43 AM, Rusty Bell <rusty.bell@transformgillette.net> wrote:

Doug,

Thank you again for connecting with me. I think everyone in the Powder River Basin would like to see more uses for coal than just thermal. We have had a lot of conversations about it, and also have built a scale up facility for anyone interested in taking their bench top research to the next level.

Here are some of the contacts that would be able to help.

Please let me know if you have any need to set up meetings in person in Gillette, and we can get those arrangements made.

Keith Williams Arch Coal kwilliams@archrsc.com

Greg Mager NTEC greg.mager@navenergy.com

CJ Fisk cj.fisk@pemining.com

If you run into roadblocks please let me know, we are trying to help navigate any hurdles that keep us from diversifying.

Rusty Bell

Director

Office of Economic Transformation

rusty.bell@transformgillette.net

307-306-8606

From: Doug Matheney
Sent: Sunday, April 9, 2023 5:58 AM CDT
To: jatchison@semdc.org
CC: Hill, Roy
Subject: Re: Call last week

Let's talk when you have time.
Thank you for getting back to me, and explaining what is going on with Westmoreland.
I believe that we can still help to keep them operating.
Sincerely
Doing

Sent from my iPhone

On Apr 8, 2023, at 8:30 PM, <jatchison@semdc.org> <jatchison@semdc.org> wrote:

Hi Doug,
I saw that you had called my cell phone late last week on Thursday. I'll try to get ahold of you on Monday, but will be traveling.

If you were checking in on Westmoreland, I have not heard anything from them since you and I chatted about 10 days ago and I emailed them. I do know they have been involved up to "you know what" in a **Significant Lawsuit** and related **Court Hearing** last week on Thursday. Could impact the future of their Colstrip Operation and our community in a big way.
Thus, they have been a bit occupied. We'll talk soon.

Have a Special Easter Holiday,

Jim Atchison
SEMDC
406-749-3751 Cell